LAND DEVELOPMENT POTENTIAL STUDY

CHATHAM COUNTY, N.C.

ABSTRACT

TITLE: Land Development Potential Study, Chatham County, North Carolina

AUTHOR: North Carolina Department of Local Affairs, Division of Community Planning

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DATE: [illegible]

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ABSTRACT: The natural and [illegible] features of Chatham County that create a potential for or restrict future development are identified and [illegible] with respect to their influence on the potential for development. [illegible] county has considerable potential for [illegible] additional residential, industrial, commercial, agricultural and recreational development. [illegible]

LAND DEVELOPMENT POTENTIAL STUDY

CHATHAM COUNTY, N.C.

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LAND DEVELOPMENT POTENTIAL STUDY

PREPARED FOR THE COUNTY OF CHATHAM, NORTH CAROLINA

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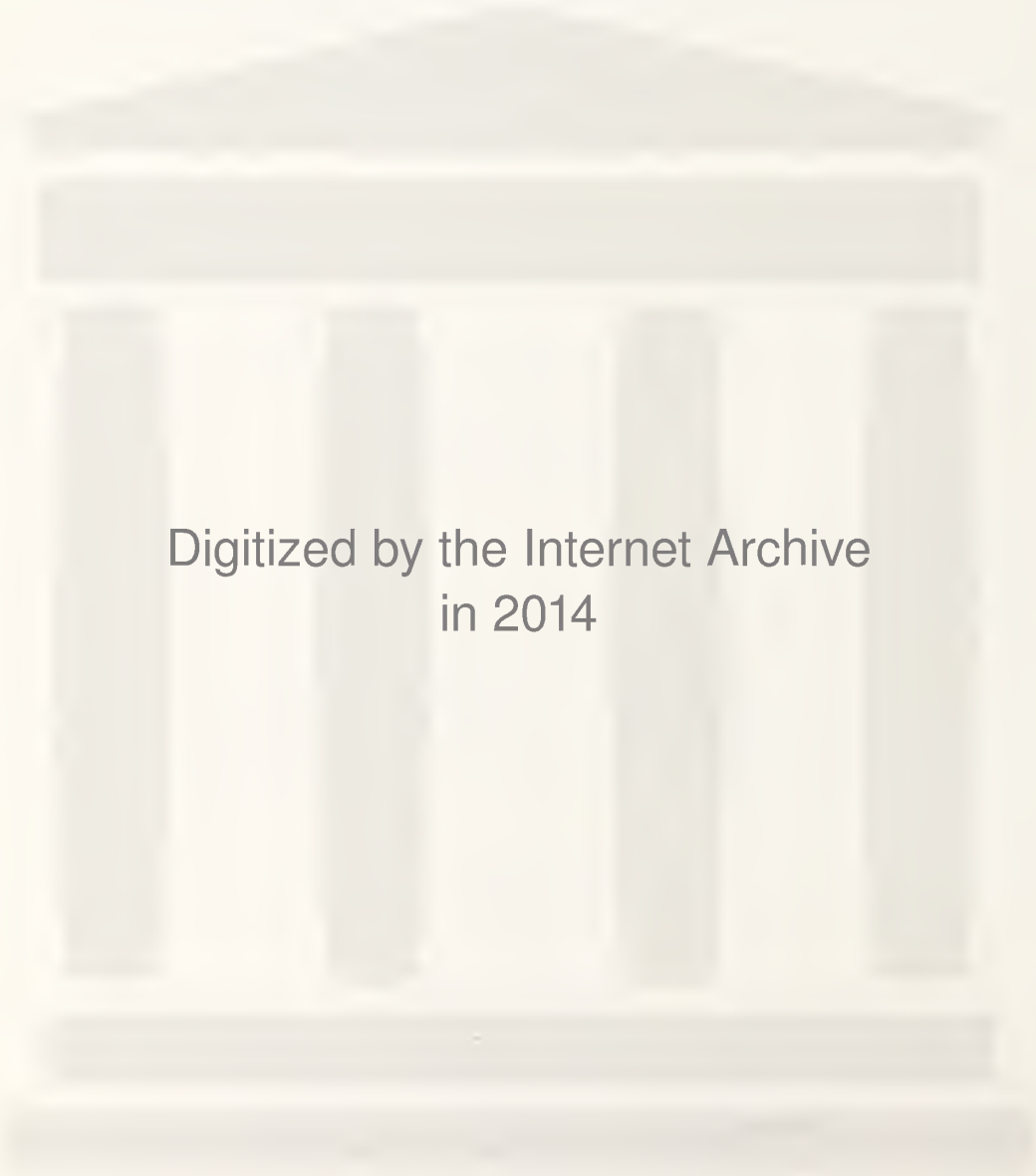

FOREWORD

On April 27, 1968, Chatham County became the recipient of a planning assistance grant of $9,000 from the United States Department of Housing and Urban Development. The funds are being administered by the North Carolina Department of Local Affairs, Division of Community Planning, with the Federal government providing funds to match the county's on a 2 for 1 basis.

The impetus for planning in Chatham County can be traced to the announcement by Congress and the Army Corps of Engineers that funds were being appropriated for the New Hope Reservoir Project. The potential for industrial and recreational development in rural Chatham County has vastly increased as a result of this proposal. The County Board of Commissioners has therefore contracted with the Division of Community Planning for technical planning assistance. By expressing the desire to institute a planning program, the residents of Chatham County have recognized the need to insure proper and orderly growth.

The contributions that comprehensive coordinated planning can make are:

a) to anticipate the needs of the people during the foreseeable future,

b) to formulate programs for meeting those needs,

c) to guide development as it takes place so that the interests of the general public are preserved, and

d) to preserve the rights of individual property owners.

This Land Potential Study is the first in a series of reports that will establish guidelines for impending growth. Subdivision Regulations are now being prepared for adoption by the County Commissioners, and a Land Development Plan will be published in the spring of 1970.

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INTRODUCTION

In 1900, North Carolina was approximately 90 percent rural in population. By 1960 the rural population had declined to 50 percent of the total. This urbanization is largely due to increased industrialization, mechanization of farms and farming, and improvements in transportation. As the number of agricultural jobs declined, people have moved to the cities looking for employment and new homes. Simultaneously the cities and towns have expanded as they absorbed the new residents. This growth was first noticeable along the roads and highways leading from the towns where new homes and businesses developed on readily accessible land. In some areas, new residential subdivisions and shopping centers have been built to meet the growing demand for homes and services. New industries have also come to the cities, seeking to develop new, modern, manufacturing facilities on spacious tracts near the edges of the cities from which they will also be able to utilize the available labor force.

Urbanization, as it spreads across the United States, is swallowing the land of rural America. Urban-type development is becoming more and more dispersed by industrial parks, the Interstate Highway System, and other Federal and state projects. Progress means growth, and growth means new industries, larger and more complex towns, improved farming techniques, more roads and better and expanded community facilities. All require open land --a commodity that exists in abundance in Chatham County.

The point to be made is that Chatham County has large amounts of undeveloped land and is without question a prime target for more concentrated types of development. Chatham is surrounded by the industrialized Piedmont Crescent and other population centers of North Carolina. As the Piedmont Crescent, including Chapel Hill, Durham, and Raleigh, grows, so will Chatham County. Industries searching for large tracts of available land near dense population concentrations will look to Chatham County. The New Hope Reservoir will act as an added enticement.

The Commissioners and Planning Board members, acting for the citizens of Chatham County, feel that now is the time to prepare a comprehensive plan--an overall guide for future development. A comprehensive plan shows how a county can best use its resources to become the kind of place it wants to be. It specifies how present and future improvements and uses of land and other natural resources should be related, and serves as a guide to both public and private development activities.

For any county, comprehensive planning is an investment in the future. Unguided urban invasion of a rural county wastes tax dollars, farmland, and other resources. It fosters land-use conflicts--such as those that often arise when residences and business establishments are located next to each other. Often it impairs farming. This in turn impairs local industries and businesses that serve farmers.

A county that has a plan for its future development is looked on more favorably by industry and business seeking new locations, and often the county can participate more effectively in state and Federal development or community aid programs.

The purpose of the Chatham County Land Potential Study is to evaluate existing resources within the county, both natural and manmade. This involves inventorying land uses, soils, streams, minerals, and geological features, as well as housing conditions, water supply, and community facilities. From a thorough analysis of present conditions, factors are determined that will encourage or inhibit future growth and progress within the county.

DEVELOPMENT POTENTIALS

CONCEPT OF DEVELOPMENT POTENTIALS

This chapter of the Land Potential Study is an overview of the potential of Chatham County for future development. All the land in the county has been evaluated for its potential for each of five general uses: residential, industrial, commercial, agricultural, and recreational. These development potentials were determined through careful analysis of the existing conditions throughout the county. This chapter summarizes the statistics and information from the subsequent sections of the book, where more detailed information is presented on each of the many aspects that affect the development potential. The potential of the land for each use has been evaluated from the best to worst potential according to the criteria indicated with each development potential map. These maps follow the respective sections of this chapter.

It will be noted that several areas have equal potential for more than one land use, while the best potential for other areas is a specific land use. The determination as to which lands should be developed for which uses is not made in this report. Further study will be made of the expected future need for specific land uses and estimates will be made of the quantities needed in each land use category. This information, together with the plan for the best land use relationships in a long range development program, will be presented in the Chatham County Land Development Plan.

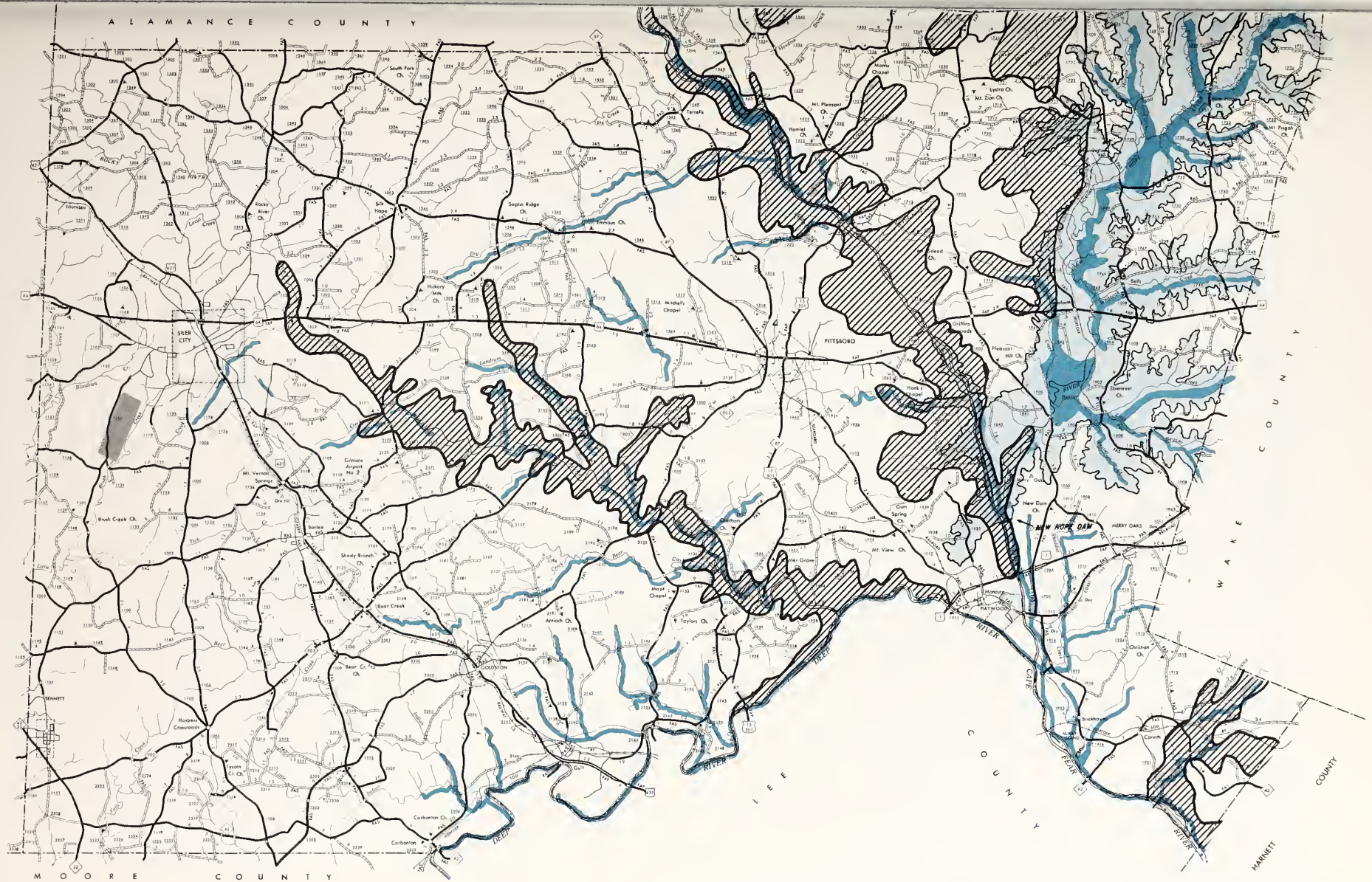
In contrast to those lands that are suitable for many uses, there are some aspects of the land that render it unsuitable for intensive use. These factors, both natural and manmade, will limit development in certain areas of the county. The location of these limiting factors is shown on Map #1 on the following page.

Areas subject to frequent flooding or which have high water tables should be avoided for any permanent structures, or for any intensive residential or commercial use. Areas in the landing

paths of airfields should be avoided by uses which attract large population concentrations. Land with slopes greater than ten percent will present complications for building structures and good roads. Intensive use should be excluded from these areas. Also, the land to be acquired for the New Hope Reservoir will become unusuable for any private purpose. Thus while the reservoir is most often considered an incentive to development, in this case it is a limitation.

There are many other factors that limit the potential for development such as distance from schools, unavailability of public water supply and sewage disposal systems, lack of public fire protection and the distance from paved roads. These factors are not shown on the map since they do not create the same limitations to all purposes. These factors are discussed in detail in the subsequent sections of this report.

A very important limiting factor which has not been shown on Map #1 is the presence of poor soil conditions. Because of the very special considerations that must be given to soil conditions, a separate section of this report has been devoted to this subject, with a detailed consideration of the particular limitations.



CHATHAM COUNTY

NORTH CAROLINA

LIMITATIONS TO DEVELOPMENT

- NEW HOPE RESERVOIR
- AIRPORT LANDING ZONE
- FLOOD PLAINS
- 10% SLOPE OR MORE

N

SCALE

RESIDENTIAL DEVELOPMENT POTENTIAL

GENERAL DETERMINATIONS

Residential development in Chatham County will be influenced by many factors. The most important of these factors are the desirability of Chatham County as a place to live and the availability of jobs. The desirability for living in Chatham will be affected by the preservation of the attractive natural features and the quality of the community facilities. Availability of jobs will influence the population growth, which is the principal determinant of the need for residential development. Restrictions as to the location of residential development are imposed by such factors as topography, drainage, soils, and the personal preferences of families. The following characteristics should be noted.

Approximately ten percent of the land in the county has slopes greater than ten percent. This land is located primarily in Baldwin, Williams, Hickory Mountain, Oakland and Cape Fear Townships. Steep slopes present difficult building sites for homes and are generally not desirable for residential use.

During periods of unusually heavy rainfall, the land in the vicinity of the Cape Fear, Deep, Haw, New Hope and Rocky Rivers is subject to flooding as are portions of the tributaries to these rivers. Residential development in these floodplain areas should be avoided.

Soils with high shrink-swell potentials (expansion when wet) are found to some extent in every township, but are predominant in the southern and eastern part of the county. The worst of these soils are the White Store-Creedmore soil association in Williams, New Hope, Cape Fear and Gulf Townships. The Timberlake-Herndon-Orange soil association in the southwest part of the county and the Helena-Appling-Vance soil association in the north central part have similar limitations. All of these soils also have low percolation rates, rendering them unsuitable for extensive use of septic tank fields.

The best soils for residential development are found in the Georgeville-Davidson association between Siler City and Pittsboro. These soils will support high density residential development. The soils in the Georgeville-Herndon association in Albright, Hadley, and Matthews Townships can support medium to high density development. The soils in the vicinity of Bennett, Goldston, Gulf, Bynum, Farrington, Corinth, Moncure, Haywood and Merry Oaks are suitable only for low density development.

Water resources are excellent in Chatham County. Surface water is abundant and ground water supplies in most areas are adequate to support the rural densities. The poorest ground water yields are in the southwest and northwest portion of the county.

The municipal water and sewer systems in Siler City and Pittsboro are not adequate to handle the projected population increases for the year 1980, and therefore will hinder residential development. Expansion of the Pittsboro water plant is expected before 1971.

Natural gas and electric service is provided throughout the county by the North Carolina Public Service Company and the North Carolina Power and Light Company respectively. Residential development will benefit by the extensive gas and electric service. However, residential development will be hampered by the lack of Extended Area Telephone Service in the county.

The transportation system (primary roads) is conducive to residential development and will help promote residential growth. Access to commercial districts, business districts, and places of employment within and surrounding Chatham County is adequate. While 42 percent of the roads in the county are unpaved, this is not unusually high in view of the low density (only 28,000 people in 452,480 acres). But, as the population of the county grows the percentage of unpaved roads should decrease. If this percentage of unpaved roads does not decrease, residential development will be hindered.

The type and quality of community facilities located in Chatham County influences an individual desiring to locate a home in the county. Minimum national and state standards are not being met in the areas of: fire protection, recreation, education, and medical services. Generally, the governmental agencies operating in Chatham County are not providing a high level of service, and this will hinder residential development.

The potential for residential development in Chatham County will not be realized unless there are jobs in the county to provide a steady income to residents. Past population growth has been continuous but slow and sporadic. The primary reason is that although new residents have come into the county, many of the younger residents have grown and moved away to urban areas where there were more jobs available at better wages. The following table shows the rate of population growth for each decade from 1910 to 1970:

TABLE 1

CHATHAM COUNTY POPULATION GROWTH, 1910-1970

Year	Population	10 Year Growth	Rate of Increase
1910	22,635		
1920	23,814	1179	5.2%
1930	24,177	363	1.5%
1940	24,726	549	2.3%
1950	25,392	666	2.7%
1960	26,785	1393	5.5%
1970	28,309	1524	5.7%

Sources: 1910-1960: U. S. Bureau of the Census.
1970: N. C. County Population Projections (Raleigh, N. C.: N. C. State Planning Task Force, August, 1969).

The largest growth rate in the past 60 years has been in the past decade. As expected, the greatest part of this population increase occurred in Matthews Township (Siler City) and in Center Township (Pittsboro). With a greater availability of jobs that

is promised by industries now developing in the county, population growth can be expected to continue, if there are adequate homes available at prices that can be reasonably paid from the wages received.

DETAILED ANALYSIS OF RESIDENTIAL POTENTIAL

Urban areas exert great influence on the location of further residential development. People desire to live in close proximity to their jobs and to large shopping areas. People also prefer such city services as water and sewer, police and fire protection, garbage and refuse collection and recreation. Therefore, the vital areas for growth should be around those existing heavily populated areas in the county - Siler City and Pittsboro.

Siler City and Pittsboro have the largest shopping areas and the majority of the employment opportunities in the county. There is a high school in each city and both have water and sewer systems - so vital today for concentrated residential development. Pittsboro will benefit in its attraction for residential development by its proximity to the New Hope Reservoir and the industrial growth near Moncure. It is also within commuting distance from the University of North Carolina and North Carolina Memorial Hospital in Chapel Hill. Siler City, the largest city in the county, will undoubtedly retain its status. As of 1968, 54 percent of the land in the city was undeveloped, with municipal facilities and services readily available to a large variety of homesites. Siler City also has the largest variety of housing (especially within a full price range or rental range) of any area in the county. Continued industrial expansion and the future Howard's Mill Reservoir, to be located 15 miles southwest of the town, should enhance its residential potential. Residential development in and around Siler City and Pittsboro will have the advantages of good natural features, better community facilities than anywhere else in the county, good possibility of connection to sewer and water service, and excellent access to the larger nearby cities of Greensboro, Burlington, Chapel Hill, Durham, Raleigh and Sanford.

Chatham County has several other areas with potential for residential development. The southeast part of the county, including the community areas of Haywood, Moncure, Merry Oaks and Corinth have potential for residential development because of the industrial development in this area which will make many new jobs available. The area is equidistant from Pittsboro, Sanford, and the New Hope Reservoir site and has easy access to Raleigh. The most serious limitations to residential development are the poor soil (White Store-Creedmore association), lack of water and sewer facilities, and poor community facilities. Unless water and sewer facilities are developed, high and medium density development should be avoided in this area.

Another area with good potential for residential development is the northeast part of the county including Baldwin, Williams, and New Hope Townships. The major attraction in this area will be the New Hope Reservoir. Although the soils in this area are generally poor for structures and septic system drainage fields, pressure for development in this area is being created by the growth of Chapel Hill, Durham and the Research Triangle. Chatham County is a major source of large rural tracts of land near these areas. This part of the county can support only very low densities of development without seriously endangering the quality of the water in the reservoir. In addition to bacteriological hazards from sewage drainage, extensive development of this land will also lead to erosion of the soil and considerable sedimentation problems in the reservoir.

There is also some potential for residential development in the southwest part of Chatham County in the vicinity of Bonlee, Bennett, Goldston and Gulf. Bennett is equidistant from Carthage and Asheboro on N. C. Highways 22 and 42. This community is about one mile from the proposed Howard's Mill Reservoir which will increase the attractiveness of the area for people who work in Asheboro and Sanford, but desire to live "in the country". The community does not have any public water supply, however, and lies in an area where success with wells is quite limited.

This plus the lack of public sewage disposal will limit residential development to very low densities.

The Goldston-Gulf-Bonlee area has good potential for future residential development. It lies between Siler City and Sanford on U. S. 421 and is also served by the Southern Railway. The Goldston-Gulf Sanitary District has a water treatment plant and water lines through the area. Plans have already been made for a sewage treatment plant and sewerage system, which are needed because of the poor soils in the area. The industrial potential of the communities is good and should lead to new jobs which would attract residents. Bonlee, lying between Siler City and Goldston on the U. S. 421 corridor and the Southern Railway line, has better soils than the Goldston area, but no public water supply. It may be connected in the near future to the Goldston-Gulf Sanitary District. This would enhance the potential of the area for future residential development. This entire corridor is also served by a gas line from Siler City to Sanford. There are volunteer fire departments at Bonlee and Goldston. The entire area lies in the Chatham Central School District with the high school at Bear Creek, between Bonlee and Goldston. The greatest potential of this area can be realized by the cooperative efforts of these three communities towards the end of getting better overall community facilities and attractive development along the U. S. 421 corridor.

The areas least likely to generate any sizeable future residential growth are Albright and Hadley Townships. They have good soils, but no extensive development other than agriculture and woodlands. There are no major community facilities, nor are there public water or sewerage systems. The closest high school is in Siler City. This area is expected to remain rural for quite some time as people who desire urban amenities continue to move to Siler City and Pittsboro.

INDUSTRIAL DEVELOPMENT POTENTIAL

Chatham County, being a rural and rather undeveloped county, has tremendous expanses of open space and idle land. Because of the county's proximity to the Piedmont Crescent cities and the Research Triangle, it is ripe for those industries desiring to expand and needing spacious site locations. Thus Chatham County as a "hinterland" area could begin to cater to the economic needs of the Piedmont Crescent cities. Rather than providing the Crescent with purely agricultural products - dairy products, beef, swine, poultry, and cash crops - a shift could be made to draw industries that need large tracts of flat well drained land, much water, an excellent primary road transportation network, good rail and freight service, plentiful gas and electric power, and a ready market for their products (Atlanta or Washington, D. C). Specifically, we are talking about manufacturing plants.

In addition to the above mentioned attributes, Chatham County can also offer industry large tracts of land at a reasonable price that are presently for sale, a citizenry interested in promoting the industrial potential of the county, and a skilled labor force. Within commuting distance of Chatham County (one hour) are the cities of Asheboro, Burlington, Chapel Hill, Durham, Greensboro, Sanford and Raleigh.

Chatham County is most lacking in its ability to provide high quality housing as well as community facilities. In searching for new areas to locate, corporations are very much interested in the housing market, educational facilities, and the attitudes of the civic leaders in the community. Another factor that will limit industrial growth in the county is the lack of adequate water and sewer facilities in the municipal areas. Siler City and Pittsboro's water and sewer treatment plants simply cannot handle the projected population increases for 1980, let alone a great deal of industrial growth.

Although all soils in Chatham County are not equally desirable for industrial development, the less desirable soils (because

of their high shrink-swell potential) should not be considered totally inadequate for future industrial sites. These less desirable soils include the Timberlake-Herndon-Orange, Helena-Appling-Vance, White Store-Creedmoor, and Iredell-Enon soil associations in the southern, north central, and eastern parts of the county. As shown on the county soil map, these areas are extensive in size. The reality is that within a general soil association, there are many varying conditions and other types of soils with better percolation rates and less shrink-swell potential. Only detailed soil maps of an area, or specific site inspections, can identify the exact soil conditions in a particular location. In addition, modern engineering and construction techniques can compensate for poor soil load bearing capacities and unusual rock formations.

Pittsboro and Siler City are the two urban areas in Chatham County that have the greatest industrial potential. These two towns can offer industry the best utility service, community facilities, transportation facilities, soils, labor supplies, and water and sewer facilities in Chatham County. Water supplies are available in large quantities (especially considering the New Hope Reservoirs for the near future). Some industries might be required to develop extra sewer facilities for their own needs.

Although the soils are poor in the Corinth, Haywood, Moncure and Merry Oaks area the southeastern portion of Chatham County is a prime industrial growth area. These four communities are located near U. S. Highway 1, can draw water from the New Hope Reservoir and the Cape Fear and Deep Rivers, are served by the Seaboard Coast Line and Norfolk-Southern Railroads, and have access to large electric power (Carolina Power and Light Company plant at Moncure) and natural gas supplies. In addition, Pittsboro and Sanford's labor supply are only 15 miles away and large tracts of land are for sale in this area at reasonable prices.

The Gulf-Goldston area in Chatham County is another prime industrial area. Despite having poor soils, the Gulf-Goldston area has these attractive features: major transportation arteries

in U. S. Highway 421 and the Norfolk-Southern and Southern Railroads, an abundance of surface water from the Deep River, water and eventually sewer treatment facilities, electric power, natural gas, and Sanford's and Siler City's skilled labor supply. Carbonton, a crossroads community located in this area, has basically the same potential as Gulf and Goldston. Carbonton is located near the Deep River on North Carolina Highway 22-42 and is served by the Norfolk-Southern Railroad. Also, Carbonton lies only eleven miles from Sanford, a city of nearly 15,000.

Specific sites being sought by industries are large, level sites on major highways which can be easily served by existing water and sewer lines or by short extensions of existing lines. Many large industries also need rail service for either raw materials or finished goods or both. Several sites have been located in Chatham County and are being promoted by interested parties. Chatham County does not have an Industrial Development Commission to promote the resources of the county. Siler City does have an active Chamber of Commerce and two local industrial development corporations. Pittsboro also has a local industrial development corporation. The function of the North Carolina Department of Conservation and Development's Division of Commerce and Industry is to promote the business and economic growth opportunities of the State of North Carolina. The Division of Commerce and Industry will assist corporations in finding specific plant locations, local capital, and discuss with industries the special advantages and services offered by the State of North Carolina. Chatham County's relationship with the North Carolina Department of Conservation and Development's Division of Commerce and Industry has not been vigorously developed for the past several years. This relationship must be renewed and strengthened and periodic contact with the regional representative of the Division of Commerce and Industry should be made.

COMMERCIAL DEVELOPMENT POTENTIAL

Commercial development in Chatham County is primarily dependent upon these factors:

1. Concentration of population.
2. Primary roads.
3. Population growth trends.
4. Average per capita income.
5. The consumer.

Business establishments located in dense population concentrations potentially have more customers than businesses located in sparse areas. Commercial development occurs where it is accessible to the potential customer - on a road or highway. Stores located in an area where the population and the per capita income of that population is increasing, potentially have more customers that will spend more money. Finally, business will seek to locate only where there is a potential demand for their product or service. The above factors and their relationship to the commercial development potential of the county will be discussed in the explanation that follows.

In Chatham County the per capita income has increased 43 percent from 1962 to 1966. Retail sales have increased 62 percent from 1960 to 1968, and the population has increased 5.7 percent from 1960 to 1970. Conservatively, it can be stated that Chatham County has established economic growth trends that will enhance the potential for commercial development.

In Chatham County the consumer is concentrated in Siler City and Pittsboro. Siler City and Pittsboro were mentioned previously as the most attractive areas in the county for future residential development. The two towns are also served by a municipal road system as well as the major highways of the county. The largest population increases over the past decades have taken place in Matthews (Siler City) and Center (Pittsboro) Townships. For the reasons mentioned above, Siler City and Pittsboro have the greatest commercial growth potential in the county.

The New Hope Reservoir will be a tremendous boost to the commercial development potential of Chatham County. All the major access routes to the New Hope will increase the potential for more concentrated business activity. The roads include: U. S. Highways 1, 15-501, 64, and 421, and North Carolina Highways 751 and 87. The businesses located along these routes will cater to the tourist needs. Tourist oriented businesses will consist of service stations, amusement areas, motels, restaurants, sporting goods stores, and hardware type supply stores. Pittsboro will become the shopping center for visitors to the west side of the New Hope Reservoir. The most intense commercial development resulting from the New Hope's impact is expected along U. S. Highway 15-501 north of Pittsboro and U. S. Highway 64 east of Pittsboro. These two routes will carry traffic from the Chapel Hill-Durham area (U. S. 15-501) and from Raleigh (U. S. 64).

The southeastern portion of Chatham County - Corinth, Haywood, Merry Oaks, and Moncure - is a prime potential area for enhanced commercial development. This potential is due to the residential and industrial potential of the area as well as its proximity to the New Hope Reservoir. Moncure and Haywood located just downstream from the dam site have the greatest commercial potential in the area because these communities are served by two on-off ramps of U. S. Highway 1. Land adjacent to the existing ramps is prime land for a shopping center type complex.

Bynum and Bennett are two areas of prime commercial potential. Bynum located on heavily traveled 15-501 and near the New Hope Reservoir caters to highway traffic with its service stations and restaurants. Land along 15-501 in the Bynum area is ripe for more intense commercial development, and has been zoned, north of the Haw River, for business use by the Chatham County Board of Commissioners. Intense commercial development is expected along 15-501 from State Road 1713 (old U. S. 15-501) to State Road 1525.

Bennett, as a residential growth area and a community that will eventually be located near the Howard's Mill Dam, should

experience more commercial development along N. C. Highway 42-22 and State Road 1151. It could become a shopping center for all the residents and visitors of the future Howard's Mill Reservoir.

In the rural areas there will be a continued demand for the convenience type of commercial development to serve the immediate population with everyday needs. These convenience type businesses are the neighborhood grocery store-service station combinations found in Bear Creek, Carbonton, Harpers Crossroads, Silk Hope, and numerous other state road intersections.

Once the New Hope is completed it will become one of Chatham's greatest economic assets - but a word of caution needs to be expressed. Commercial development that caters to the tourist trade if oftentimes unsightly and a blight on the landscape. Where possible commercial enterprises should be grouped for more economic operation and traffic safety. Commercial advertising signs and billboards should be avoided so that they do not interfere with other land uses. Chatham County presently has a zoning ordinance for Baldwin and Williams Townships. In order to coordinate and guide future development, the County Commissioners should consider adopting zoning regulations for the entire county that will supplement the regulations in effect in Siler City and Pittsboro and their one mile extraterritorial zoning jurisdictions.

AGRICULTURAL DEVELOPMENT POTENTIAL

Chatham County is primarily an agricultural county and will remain so in the foreseeable future. At the base of Chatham's economy are the livestock and poultry industries. Both industires offer wide profit margins, require only a small amount of initial capital and hired help, and should continue to prosper in the years ahead. In 1959 Chatham derived $14,429,270 from its beef, swine, and poultry products. In 1964, $29,655,648 was derived from the same products. The livestock and poultry industry increased 106 percent in economic value during this five-year period.

While Chatham County is deriving more and more of its wealth from agriculture, the number and size of its farms is remaining fairly constant. This means that the individual farmer is becoming more productive without increasing the size of his landholdings. Mechanization, liquid and bulk fertilizers, chemicals, better farm equipment, and scientific farm management is contributing to the more productive Chatham County farmer.

On the following page is a table summarizing the key agricultural statistics related to Chatham County for the years 1959 and 1964. The percentage of land being used for pastured cropland, woodland pasture, and other pasture is increasing greatly. The value of all farm products sold is also increasing, especially in the areas of livestock and poultry.

As the cattle and broiler industries expand, more and more land in the county will be turned to pasture - to allow the cattle to graze and to expand the chicken barns.

In 1966, 94 percent of the land in Chatham County was cropland, pasture and woodland. In terms of agricultural land capability, Chatham County had no Class I soil in 1966 but had 101,000 acres of Class II soil. Soil capability indicates the permissable intensity of use and the range of plants for which a soil is suitable. Class I land is the best, nearly level,

TABLE 2

SELECTED CHATHAM COUNTY AGRICULTURAL INFORMATION, 1959 AND 1964

	1964	1959	Percent Change From 1959 To 1964
Number of Farms	1,712	1,731	-1
Land in Farms, Acres	210,904	216,391	-3
Average Size of Farms, Acres	123.2	125.0	-1
Acres of Harvested Cropland	32,029	36,695	-1
Acres of Pastured Cropland	10,210	5,299	+93
Acres of Idle Cropland	8,181	9,398	-10
Acres of Crop Failure	308		
Acres of Woodland Pasture	19,499	15,308	+27
Acres of Woodland Not Pastured	102,873	117,093	-12
Acres of Other Pasture	27,984	23,498	+19
Number of Cattle and Calves on Farms	19,226	15,245	+26
Number of Milk Cows on Farms	4,699	4,504	+4
Number of Hogs and Pigs on Farms	13,107	16,750	-22
Chickens Four Months Old and Older	310,589	233,968	+33
Value of All Farm Products Sold	$19,702,762	$10,833,694	+82
Value of All Crops Sold	3,344,178	2,554,837	+24
Value of All Livestock and Livestock Products Sold	16,332,658	8,278,857	+97
Value of Poultry and Poultry Products Sold	13,322,990	6,150,413	+117
Number of Commercial Broilers Sold	24,337,619	10,475,813	+132

Source: U. S. Department of Agriculture, Statistical Reporting Service, Agricultural Census Reports.

with low erosion hazard. Class II land has more limitation to use due to either erosion, excess water, or soil limitations in the root zone. These limitations reduce the choice of plants or require moderate conservation practices. Soils in this class require careful soil management, including conservation practices, to prevent deterioration or to improve air and water relations when the soils are cultivated. Class II soils may be used for cultivated crops, pasture, range, woodland, or for wildlife food and cover. There are also poorer soils than these, ranging downward from Class III through Class VII.

In comparing the crop value against land utilization, it is noticeable that tobacco has a much greater dollar yield per acre than corn, hay, soybeans or wheat. Only 7 percent of the land in the county is utilized for tobacco and wheat productions yet 51 percent of the county's cash crop value comes from tobacco. But, Chatham County will lose large amounts of its prime tobacco land when the eastern portion of the county is flooded by the New Hope Reservoir.

The Chatham County Agricultural Extension Service is interested in experimenting with new cash crops, especially those related to the greenhouse and garden vegetable families. Specifically, the Agricultural Extension Service would like to introduce: cucumbers, lettuce, cabbage, tomatoes, cauliflower, asparagus, potatoes and squash. Even the hardier fruits such as blueberries and strawberries could be grown in the county. All the above mentioned cash crops would require intensive irrigation, and the instruction and guidance of the Agricultural Extension Service and other agricultural agencies. The water and technical resources are available in the county to support this type of agricultural development. Also, experimentation in the field of agronomy has shown that "truck crops" respond well to soil that has been sprayed with sewage. This could be an answer to the sewage problems (limited-capacity) in Siler City and Pittsboro.

The climate, soils, geology, topography, drainage and water resources in Chatham County have created excellent potential for agricultural and forestry development. The potential for agricultural development in the county is greatest in land capability Class II soils. Capability Class II land is located primarily in: Albright, Bear Creek, Center, Hadley, Hickory Mountain and Matthews Townships. The largest concentration of Class II land is north of U. S. Highway 64 extending from Pittsboro to Siler City.

Prime agricultural land such as that located in the above mentioned townships should be considered for retention for agricultural uses. Man will always be dependent upon productive soils for his food, clothing, fuel, and shelter. Every precaution should be taken to preserve this valuable and irreplaceable resource. Fortunately, in Chatham County urban and industrial development does not have a great deal of potential in the northwestern and north-central portion of the county. Therefore, it appears as if urban encroachment and land use conflicts will not take place in Chatham's prime agricultural areas: Albright and Hadley Townships; northern Matthews, Hickory Mountain, Center and Bear Creek Townships, and southern Cape Fear Township. The cattle and poultry industries should continue to prosper in the county as well as the newly introduced garden and vegetable crops. Tree farming will continue in all sections of the county and remain a valuable economic and aesthetic asset.

RECREATIONAL DEVELOPMENT POTENTIAL

Chatham County has numerous areas for potential recreational development. Discussed throughout this report is the recreational potential of the New Hope Reservoir. The New Hope will offer the visitor to Chatham County these recreational activities and facilities: swimming, fishing, boating, camping, hiking, nature trails, picnic areas, marinas, launching ramps, and a demonstration forest. This recreation potential extends through the entire eastern section of Chatham County.

Potential also exists in Chatham County for recreational development along the major waterways: Cape Fear River, Deep River, Rocky River, and the northern portion of the Haw River. Parks could be built along these rivers and provide nature trails, boating, swimming, fishing, and picnicking activities. Especially attractive is the Deep and Cape Fear River waterway for docking sites and picnic areas. The bottomlands of these rivers and their tributaries (creeks) are excellent areas for fishing and the hunting of small game. Potential exists for a hunting preserve along the Deep and Cape Fear Rivers near Gulf or Moncure.

Numerous private ponds dot the countryside and are the efforts of the Soil Conservation Service's water resource projects. These ponds are usually stocked with fish and many are open to the public for a nominal fee. There is potential for additional stocked game-fish ponds in all areas of the county - especially when increased tourist traffic will be attracted to Chatham because of the New Hope.

The Cape Fear River Basin Study proposes four watershed projects on the Rocky River which, in addition to providing flood control, could be developed for water supply and water oriented recreation activities. The Greensboro Y.M.C.A. also hopes to develop two lakes, as well as a boys and girls summer camp, on a 715 acre tract of land on the Rocky River east of Bonlee. This land is now being planned for a four-phase development over the next ten years.

Preime recreational land also exists in Baldwin and Center Townships for an 18 hole golf course-country club type development. The west side of the reservoir can attract this kind of recreational land use because of the residential potential of the Pittsboro area and of Baldwin, New Hope and Williams Townships adjacent to the reservoir.

The physical potential for recreational development in Chatham County is excellent. The county desperately needs a Recreation Commission to work towards the recreational development of the county. If the watershed projects are developed on the Rocky River the county should purchase sites adjacent to the projects for county parks. These parks could be preserved for their natural beauty and would require little maintenance. A potential New Hope Development Commission could work with a County Recreation Commission for establishing a State Park on the west side of the reservoir near U. S. 64 just before Griffin's Corssroads - the site presently suggested for a county park by the Corps of Engineers. Tourism could be promoted by the Recreation Commission and will help in making the New Hope a dominant economic factor on the county. There is also need in the county for a Y.M.C.A. and outdoor playground and sporting facilities. Since Chatham has no county sponsored recreation program, a Recreation Commission could be established to develop county-wide recreation activities.

In summary, the prime recreation land in the county is located off the high water line of the New Hope Reservoir. This means the entire shoreline of the New Hope is prime recreational land and lends itself to park and natural trial development as well as the commercial (hotels, motels, and lodges) development associated with recreational land uses. Additional prime recreation land is located on the Deep and Cape Fear Rivers from Gulf to the Buckhorn Power Plant. The Rocky River north of Siler City and west of Bonlee and Goldston flows through wooded flatland that could easily be developed into a county park system along its banks. The heavily forested townships of Gulf,

Oakland, Haw River and Cape Fear have excellent small game supplies especially along the creek beds. Historical sites in the county enhance the potential for tourism.

SUMMARY - CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Chatham County has the potential for increased development in every general category of land use: residential, industrial, commercial, agricultural and recreational. Much of the land in the county could be used more intensively than it is at present. New industries are now being built in the county. These will provide new jobs and attract new residents to the county in the near future. The New Hope Reservoir is also expected to be completed within the next five years. The reservoir will be available for use as a major recreation facility. It will increase the attraction of Chatham County for new residents, and draw transient visitors and trade as well.

This potential for future development can be either increased or reduced. Development, by its very nature, demands that land be converted from one use to another use or to a different intensity of its present use. Often the demand for one type of development conflicts with the demand for another. There is enough land in Chatham County with enough potential to satisfy development demands for a long time yet to come if the land is developed with due regard for the limitations of the land and the interdependent relationships of land development and community growth.

Since this potential for future development does exist, there are four primary courses of action which may be considered in Chatham County. These are:

1. The county may actively seek to attract new development to take advantage of the existing potential. To do this the county will have to make major investments in community facilities and be willing to accept the resulting urbanization.
2. The county may allow development to occur gradually as it is at present in response to the pressures of urbanization in the surrounding Piedmont Crescent, guiding and

coordinating the development to provide the best protection of the natural environment and human welfare.

3. The county may actively seek to prevent development and maintain the rural quality that presently exists.
4. The county may do nothing at all.

Of these four courses of action, only the last will not require a planning program. The result of doing nothing at all to guide development in a desired direction will be a waste of land and other natural resources, pollution of streams and the New Hope Reservoir, and a very haphazard, uncoordinated pattern of development. Either of the other three alternatives will require a continuous planning program by the county government.

The county government is presently pursuing the second alternative through a continuing program to guide and coordinate the gradual development of the county. Several steps in this program have already been taken. The County Planning Board was formed in 1966 to study the problems of development and make appropriate recommendations to the County Commissioners. Zoning ordinances were enacted in Baldwin and Williams Townships to prevent substandard development from occurring under the influence of the urbanizing pressures of the Research Triangle. A comprehensive water and sewer system study has been completed with proposals for a county-wide water supply system and extended sewerage and waste treatment systems in the urbanized areas. The County Commissioners have approved the formation of a County Housing Authority to provide standard housing for low-income families. Most recently the county has had a garbage disposal study completed by the County Sanitarian and the North Carolina Board of Health with recommendations for providing sanitary disposal sites in the county.

Throughout this period of planning, the county has sought to coordinate its development with the development programs in the surrounding counties by participating in the North Central Piedmont Resource Conservation and Development Project. The principal objectives of this project are: water resource

development; air and water pollution control; proper land use for all purposes; economic development; adequate treatment of all lands and land uses; human resource development through better education, health and environmental conditions; adequate outdoor recreation; adequate regional planning to meet the needs of a rapidly expanding society; adequate sewage and waste disposal; expansion and improvement of training and retraining programs; landscape beautification; and improvement of transportation and community facilities. In addition to participating in the Resource Conservation and Development Project, which is active in Chatham, Orange, Alamance, Guilford, Caswell and Rockingham Counties, the Planning Board has maintained contact with the Research Triangle Regional Planning Commission which coordinates planning programs in Orange, Durham and Wake Counties.

RECOMMENDATIONS

This report is the next step in the planning program. In it, the Planning Board has sought to evaluate the potential of the county for future development, to identify and outline the present problems that limit development, and to forecast the possibilities for problems in the coming years. The Planning Board has also sought to outline programs of action that will overcome present problems, prevent their reoccurrence, and preclude new future problems. The following recommendations are presented for consideration:

1. Chatham County should work toward obtaining detailed soil maps of the entire county. Such maps are much more useful than the general soil map since they provide specific information on the types of soils, slopes, erosion problems and land capability. This information would help the landowner know the value and best potential of his land. Developers would have a better guide to usable land. The county and town planners would have better information for the basis of development plans. At present, detailed maps are available only

for the Siler City Planning Area. The balance of a county-wide mapping program could be accomplished in coordination with the Soil Conservation Service and the Resource Conservation and Development Project.

2. Chatham County should continue its efforts to obtain complete United States Geological Survey mapping of the county. These maps would provide topographic and drainage information as well as the location of natural and manmade features. They would provide a much better base map for a continuing planning program than is presently available. The Division of Mineral Resources of the North Carolina Department of Conservation and Development is responsible for annual revision of the U.S.G.S. mapping priorities of the state. Part of the county is already being mapped under an accelerated program. The County Commissioners should press for the early completion of mapping of the balance of the county, coordinating these needs with those of the Resource Conservation and Development Project.
3. Chatham County should continue working with the Resource Conservation and Development Project on the evaluation, conservation and improvement of water resources in Chatham, giving special attention to the need for protection from pollution, stream reclassification, protection of lakes and streams from siltation, utilization of waterways for recreation areas, provision of public water supplies, flood control and stream channel improvement. To this end, the county should review periodically the use of water resources and the effectiveness of protective measures in use.
4. In view of the increasing demand for public water supply throughout the county and the need to develop additional water supply sources, the County Commissioners should come to a decision as to whether or not the county should work towards implementing the County Water

System proposed in the Water and Sewer Planning Report by L. E. Wooten and Company. The towns and communities in the county must plan for expansion of facilities or construction of new water systems. These plans will be affected by whether or not there will be a County Water System. The commitment of the county to a County Water System at an early date will allow communities to build their facilities to take advantage of the future improvements and avoid costly duplication of raw water storage and treatment facilities.

5. The need for controlled, sanitary garbage disposal sites in the county should be provided for in the near future. The recent study of the North Carolina Board of Health on waste disposal should be evaluated with respect to existing land use, waste disposal needs and the possibility of future development. Upon implementation of a waste disposal plan, continuing action should be maintained to prevent unauthorized dumping in the county.
6. The county should seek to eliminate the problems of substandard building construction in general and substandard housing in particular through enacting building codes, electrical codes, fire codes, plumbing and heating codes, and housing and occupancy codes to insure that minimum standards are met to protect the health, safety and welfare of the residents of the county. Adequate protection will also require that such codes be enforced through a continuous program of construction inspection by qualified personnel. Further action to improve housing conditions should be taken in establishing a Housing Authority and supporting a program to develop housing with federal assistance for low-income families in the county.
7. The County Commissioners should evaluate the costs and benefits of establishing a county-wide program for fire

prevention and fire protection. There is an immediate need for a coordinated program to provide this protection.

8. Chatham County should continue its efforts to upgrade the educational program and facilities. This program is well planned and aimed at satisfying the needs of the county.
9. Medical and health service in the county needs to be increased to cope with the increasing population and development. While more doctors in the county would be desirable for greater availability of medical treatment, many illnesses and other health problems could be prevented by increased public health services. More nurses are needed to increase the clinic operating schedule and to expand the programs of school visits, home visits, physical therapy and rehabilitation. Environmental sanitation supervision must also be expanded to keep up with the county growth.
10. Roads and highways in the county should be improved to provide as a minimum the level of service at which they have been classified by the North Carolina Highway Commission. Where necessary, highway classifications should be changed to provide the level of service necessary to meet changing needs. Unpaved roads should be paved as population densities increase. Specific recommendations towards these ends will be made as part of the Chatham County Development Plan.
11. Telephone service in the county should be improved by combining two or more of the many exchanges in the county. Extended Area Service would draw the county closer together, providing much more convenience for both residents and businessmen.
12. Chatham County should establish a Recreation Commission to undertake the planning and development of adequate recreation facilities and programs throughout the county.

13. Chatham County should consider asking the 1971 General Assembly to establish a New Hope Reservoir Development Commission to work with the Corps of Engineers and the respective County Planning Boards and County Boards of Commissioners in coordinating the use and protection of the reservoir.

These are the recommendations of the Planning Board to the Board of County Commissioners. These recommendations can be endorsed and instituted in the form of programs by the County Commissioners; they can be accepted in principle with their institution as programs delayed until budget money is available; or, they can be rejected as unsound. They should not be set aside indefinitely for future consideration. If they are considered to be of any merit to the future development of Chatham County, they should be acted on soon to provide a knowledgeable basis for future planning.

BACKGROUND FOR DEVELOPMENT

HISTORY

Chatham County is rich in historical tradition. The first settlers were Scottish Highlanders who sailed up the Cape Fear River and settled along the bottomlands of the Haw and Deep Rivers. By 1750, the Scottish Highlanders were joined by settlers of Quaker and English descent. Their farm sites were located in what today is known as Chatham County, but in 1740 was part of Orange County.

On January 26, 1771, England, in an effort to diffuse the rebellious people of Orange County, decided to subdivide Orange County. Thus in the hope of lessening the voices of opposition, Chatham, with her twin sisters Wake and Guilford Counties, was created. The colonists named the county in honor of the Earl of Chatham, an Englishman who defended the liberty of the colonists and was a champion for the rights of America. During the time of the Revolutionary War many of the Highlanders remained loyal to the British, though the majority of the residents were rebels.

Shortly after the Revolutionary War and up until the time of the Civil War, Chatham County became known as a health resort. Planters from the coast (especially the lower Cape Fear River Valley) came to Chatham to escape the noxious influence of the swamps. Some were converted from summer folks to permanent residents, giving Chatham an early nucleus of prominent and wealthy citizens.

Elegant homes were built in and around Pittsboro. A succession of distinguished academies were operated in town, and it was the home of influential families. A main stagecoach line from Salisbury to Fayetteville passed through town, and Pittsboro soon became an educational, political and social center.

Pittsboro also was a sports center with a jockey club and three day horse races in the spring and fall. Crowds attended, bets ran high, and each day's events were concluded with a big dance. Cock fighting was also popular.

The first (1790) census of Chatham County showed 9,221 inhabitants. In 1840 Chatham County had grown to 16,242 inhabitants and by 1890 Chatham's population was 25,413.

In 1815 Chatham's land was listed on the tax records as having a value of $1,068,088, and its slaves were worth $795,222. In 1840 Chatham was mentioned as one of the 12 counties in North Carolina having cotton mills. In 1850 Chatham was one of America's great wheat producing counties.

As the years passed, Chatham's economy deteriorated badly. Poor farming methods wore out the land, and the early promise of industry was fulfilled too slowly. The trauma of reconstruction after the Civil War laid its hand on all enterprises, and for a while Chatham's fame was based on a reputation for its crop of wild rabbits. From 1890 to 1910, the population decreased from 25,413 to 22,635. By 1914, most of the forests had been cut over. At one time more than 100 mills were cutting around 40 million feet of lumber annually.

Cotton was the first important cash crop grown in Chatham County, followed in 1880 by tobacco. When the boll weevil reached Chatham about the time of World War I, farmers in the western section of the county switched from cotton to tobacco. Later, the western section of Chatham began concentrating on broiler chickens and dairy cattle, as much in despair as in hope.

While agriculture was eroding, there was some industrial activity. The old Cape Fear and Yadkin Valley Railroad pushed westward, and by the early 1900's the present railway pattern was almost complete, consisting of the Southern, the Seaboard and the Norfolk-Southern.

Then came the chickens, a Chatham County experiment that swept through North Carolina, and changed the lives of hundreds of thousands of farmers, and added millions to the income of this state.

The gentleman who sparked the chicken idea was Clyde L. Fore, who went into partnership with W. E. Hart to raise broilers in 1925. Fore supplied the chicks and feed and Hart did the work.

Mr. Hart prospered from the start and his success began to spread. Chatham County's farm agent, H. M. Singletary and his successor, J. B. Snipes, spread the message to other farmers and preached diversification. Fore then began a program whereby the feed mill became a partner and financing agent of the farmer.

At one time, the feed mills offered a complete service--starting the farmers off, supplying him with chicks and feed, and then marketing his poultry. The marketing end of the business grew so large that it was "spun off" into another corporation which eventually grew into the large and modern Chatham Foods, Incorporated. This in turn led to a large and useful livestock market at Siler City.

The chickens destroyed the shackles which bound Chatham to row crops. Other livestock and crops were introduced. Grass crops, crop rotation, and chicken manure rebuilt the land.

Much of the agricultural change described above is of a recent nature. In 1945, agriculture income was $7 million annually. The products ranked in this order: poultry, tobacco, cotton, small grain, livestock and forestry. In 1956, farm products were worth $17 million, with chief sources: poultry (still first), livestock, forestry, tobacco, and gardens. From 1945-1956 Chatham built 100 grade-A dairies, and added 30,000 acres of pasture land.

Dairying on a commercial basis began in Chatham County in 1926, and is concentrated around Silk Hope. Chatham recovered rapidly from the depression days of the 1920's and early 1930's because of livestock and chicken production. In 1944 Chatham was one of the 36 counties in the entire nation to receive the War Food Administration's "A" award for food and fiber production.

Chatham's agricultural diversification has been accompanied by industrial and commercial development--especially around Siler City. Most of Chatham's non-farm labor force is employed in the textile industry, farming industry, pulpwood and lumber industry, food processing industry and feed mills. One of North Carolina's largest power plants is the Carolina Power and Light station at Moncure.

An interesting sidelight to Chatham's history is that it could have been the greatest county in North Carolina if it had not missed three golden opportunities. The location of the state capital was to have been in Chatham, but when the final ballot was taken, Wake won by one vote. Officials of the University of North Carolina almost picked Chatham for the site of the university but there were too many saloons around Pittsboro; so they decided on Chapel Hill. One of the first railroads in the state was to have been built through Chatham, but the farmers were afraid the trains would kill their cattle; so they petitioned their legislators to keep the "iron horse" away from their county.

REGIONAL LOCATION

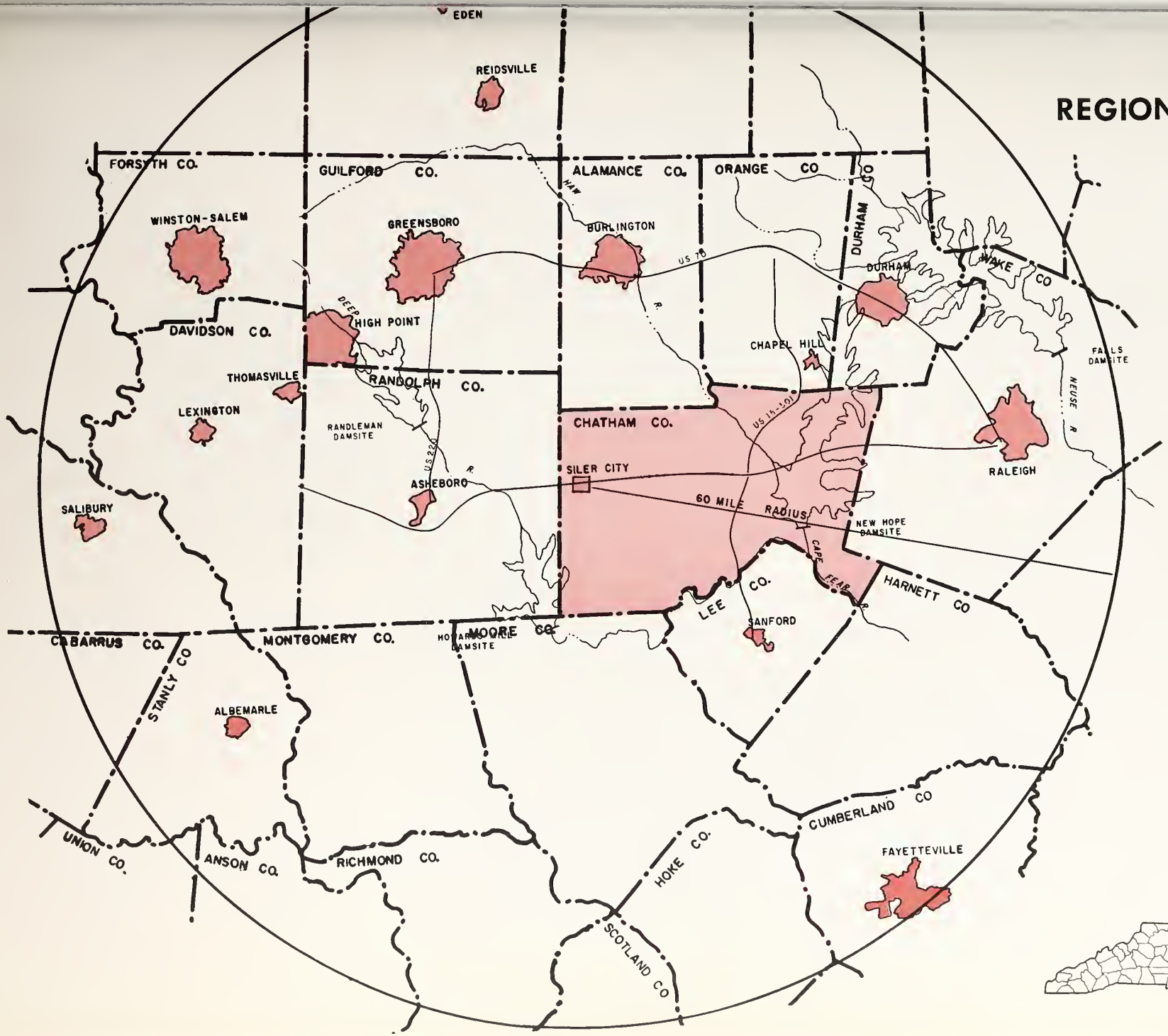
Chatham County lies approximately in the geographical center of North Carolina. Pittsboro, the county seat, is located near the center of the county, 35 miles west of Raleigh. Siler City which is in the western part of the county is located southeast of Greensboro. The county is roughly rectangular in shape, the greater dimension being from east to west. The Deep and Cape Fear Rivers form much of the southern boundary. Chatham County comprises an area of 707 square miles or 452,480 acres.

A sixty mile radius drawn around Siler City encompasses most of the heavy concentrations of population in the state. The radius includes the intensely industrialized "Piedmont Crescent" area in which the cities of Burlington, Chapel Hill, Durham, Greensboro, High Point, Raleigh and Winston-Salem are located. The sixty mile radius also includes the cities of Albemarle, Asheboro, Eden, Fayetteville, Lexington, Reidsville, Sanford, Southern Pines, and Thomasville. The population within this area is about 1,605,000 persons, one-third of the total state population, living in an area of 11,310 square miles, 21.5 percent of the total area in the state.

Sources: A New Geography of North Carolina, Bill Sharpe, Sharpe Publishing Company, Inc., 1958, Raleigh, N. C.

"Chatham County", The State, Vol. VIII, No. 45, April 5, 1941, Raleigh, N. C.

REGIONAL SETTING



NATURAL FEATURES

CLIMATE

The climate of Chatham County is described by meterologists as continental. Generally, this means hot summers and cool winters with wide extremes in temperatures.

There are three reasons for Chatham County's "continental" weather: 1) in North Carolina the flow of air is predominantly from west to east and therefore the continent has a greater influence on Chatham's weather than the ocean; 2) Chatham County is nearly 150 miles from the Atlantic Ocean and thus outside the immediate influence of maritime weather; and 3) the Appalachian Mountain system which extends across western North Carolina and Virginia, forms a barrier that holds back the flow of cold winter air which moves southward over the Plains States from central Canada. The weaker cold air movements are thus prevented from reaching the Chatham County area, while the stronger movements are modified in crossing the mountain barrier.

The average length of the freeze-free growing season ranges from April to November. The temperature drops below freezing on about half of the winter nights, but almost never fails to rise above freezing during the day. Zero temperatures are extremely rare.

Summer days are warm, but nights cool rapidly, so that early morning temperatures average below 67 degrees. July is the warmest month, with August and June only slightly cooler. Ninety degree temperatures are common and occur occasionally in late spring and early fall. Temperatures as high as 100 degrees have been reached in four different months, but are extremely rare.

Precipitation is usually plentiful in Chatham County and the distribution throughout the year is especially favorable. No calendar month averages more than five and one half inches of rain or less than three inches. The wettest months are June, July, and August which is during the time of year when man, animal, agriculture and industry make their greatest demands on the water supply. The driest month is October, at the height of the harvest season.

Heavy snowfall is a rarity; the average amount of snow for an entire winter is less than five inches. Whole winters often pass without the occurrence of any measurable snowfall. In the twenty-six year period covered by the weather records, the greatest snowfall depth at any one time was 10 inches.

Most winter precipitation comes as a result of moving low pressure storms, while summer rainfall is mainly the result of thundershowers. Occasionally thunderstorms produce strong winds and hail; hail damage in Chatham County is mong the lowest for the major tobacco producing counties of North Carolina. The distribution of summer showers is less uniform than that of winter rains. Prolonged or severe drought is rare.

Prevailing winds generally are from the southwest, with northeasterly winds running a close second and frequently prevailing during the months of September and October. The average surface wind speed is about eight miles per hour.

The sun shines about sixty percent of daylight hours, ranging from about half the time in the winter to two thirds of the time in the late spring and early fall. Heavy fogs are a rarity during any season, but are least likely in late spring and summer. The relative humidity averages about seventy percent throughout the year, with the highest humidities occurring in late summer and the lowest in early spring.

Sources: Climatological Summary, Weather Bureau, U. S. Department of Commerce, Siler City, 1957.

Weather and Climate in North Carolina, Agricultural Experiment Station, N. C. State University, Raleigh, N. C., 1958.

SOILS

The Soil Conservation Service has recently completed a General Soil Map for Chatham County which shows the main patterns of different soils as they occur throughout the county. Chatham's General Soil Map, shown on the following page, is useful for broad planning purposes since it identifies the location of large areas suitable for a particular kind of land use such as farming, forestry or urban development.

Soil types can play a major role in determining the potential use of land in Chatham County. They can serve to:

1. Predict Urban Growth Areas: Urban expansion usually follows those areas in which favorable soil conditions exist. When other factors are approximately equal, gaps in urban development are almost invariably due to soils poorly suited for urban use. Using soils information, future urban expansion becomes easier to predict. In the absence of overriding economic, political or other special factors, the soil maps serve to identify potential new growth areas. While the limitations of soil for any given type of urban development can usually be overcome by modern engineering and construction techniques, it is frequently more expensive to do so than to seek an alternate site for development. Moreover, other factors such as the availability of roads and utilities also affect the costs of development. When these factors can be provided in the areas where the soil is most suitable for development, growth can be easily guided into the desired areas.
2. Reserve Open Areas: Soil maps help to determine those areas which are most poorly suited for intensive development, enabling the government to be aware of these areas and to prevent their misuse. They may be reserved as open space for succeeding generations, or developed for recreation or other extensive uses.

SOIL INTERPRETATIONS

GENERAL SOIL MAP - CHATHAM COUNTY, N. C.

SOIL ASSOCIATIONS	SOIL	% IN ASSOC.	DWELLINGS WITH		RECREATION			LIGHT INDUSTRIES /1	ROADS & STREETS /2	GENERAL AGRICULTURE	WOODLANDS
			Sewerage Systems	Septic Tank Fields	Camp Sites	Picnic Areas	Intensive Play Areas				
GEORGEVILLE-HERNDON	Georgeville	40	Good	Fair (P)	Good	Good	Good	Fair (SS)	Fair (TSC,ER)	Good	Good
22% of County	Herndon	30	Good	Fair (P)	Good	Good	Good	Fair (SS)	Fair (TSC,ER)	Good	Good
GEORGEVILLE-DAVIDSON	Georgeville	40	Good	Fair (P)	Good	Good	Good	Fair (SS)	Fair (TSG,ER)	Good	Good
17% of County	Davidson	40	Good	Good	Fair (T)	Fair (T)	Fair (T)	Fair (SS)	Poor (TSG)	Good	Good
TIMBERLAKE-HERNDON-ORANGE	Timberlake	40	Poor (SS)	Poor (P,SS)	Fair (T)	Fair (T)	Fair (T)	Poor (SS)	Poor (TSG,ER)	Fair	Fair to Good
	Herndon	20	Good	Fair (P)	Good	Good	Good	Fair (SS)	Fair (TSG,ER)	Good	Good
13% of County	Orange	20	Poor (SS)	Poor (P,SS)	Fair (T)	Fair (T)	Fair (T)	Poor (SS)	Poor (TSG,ER)	Poor	Poor
TIMBERLAKE-HERNDON-GOLDSTON	Timberlake	30	Poor (SS)	Poor (P,SS)	Fair (T)	Fair (T)	Fair (T)	Poor (SS)	Poor (TSC,ER)	Fair	Fair to Good
	Herndon	25	Good	Fair (P)	Good	Good	Good	Fair (SS)	Fair (TSG,ER)	Good	Good
14% of County	Goldston	20	Fair (R)	Poor (R)	Good	Good	Poor (R)	Fair (R)	Fair (R)	Poor	Poor
HELENA-APPLING-VANGE	Helena	35	Poor (SS)	Poor (P,SS)	Fair (T)	Fair (T)	Fair (T)	Poor (SS)	Poor (TSG,ER)	Fair	Fair to Good
7% of County	Appling	30	Good	Fair (P)	Good	Good	Good	Fair (SS)	Fair (TSC,ER)	Good	Good
	Vance	15	Poor (SS)	Poor (P,SS)	Fair (T)	Fair (T)	Fair (T)	Poor (SS)	Poor (TSG,ER)	Fair	Fair to Good
GEGIL-APPLING	Cecil	70	Good	Fair (P)	Good	Good	Good	Fair (SS)	Fair (TSG,ER)	Good	Good
2% of County	Appling	15	Good	Fair (P)	Good	Good	Good	Fair (SS)	Fair (TSG,ER)	Good	Good
WHITE STORE-GREEDMORE	White Store	55	Poor (SS)	Poor (P,SS)	Fair (T)	Fair (T)	Fair (T)	Poor (SS)	Poor (TSC,ER)	Poor	Fair to Good
23% of County	Greedmore	20	Poor (SS)	Poor (P,SS)	Fair (T)	Fair (T)	Fair (T)	Poor (SS)	Poor (TSG,ER)	Fair	Fair to Good
APPLING-LOUISBURG	Appling	50	Good	Fair (P)	Good	Good	Good	Fair (SS)	Fair (TSG,ER)	Good	Good
2% of County	Louisburg	30	Fair (R)	Poor (R)	Good	Good	Poor (R)	Fair (R)	Fair (R)	Poor	Fair
IREDELL-ENON	Iredell	60	Poor (SS)	Poor (SS)	Fair (T)	Fair (T)	Fair (T)	Poor (SS)	Poor (TSG,ER)	Poor	Poor
Less Than 1% of County	Enon	15	Poor (SS)	Poor (SS)	Fair (T)	Fair (T)	Fair (T)	Poor (SS)	Poor (TSG,ER)	Fair	Fair to Good
AREAS WITH STEEP SLOPES	6% to 10% Slope				Fair		Fair				
	10% to 15% Slope		Fair	Fair	Poor	Fair	Poor	Poor			
	15% to 25% Slope		Fair	Poor	Poor	Fair	Poor	Poor			
	25% Slope or Greater		Poor	Poor	Poor	Poor	Poor	Poor	Poor		

Abbreviations for Limitations:

ER - Erodability

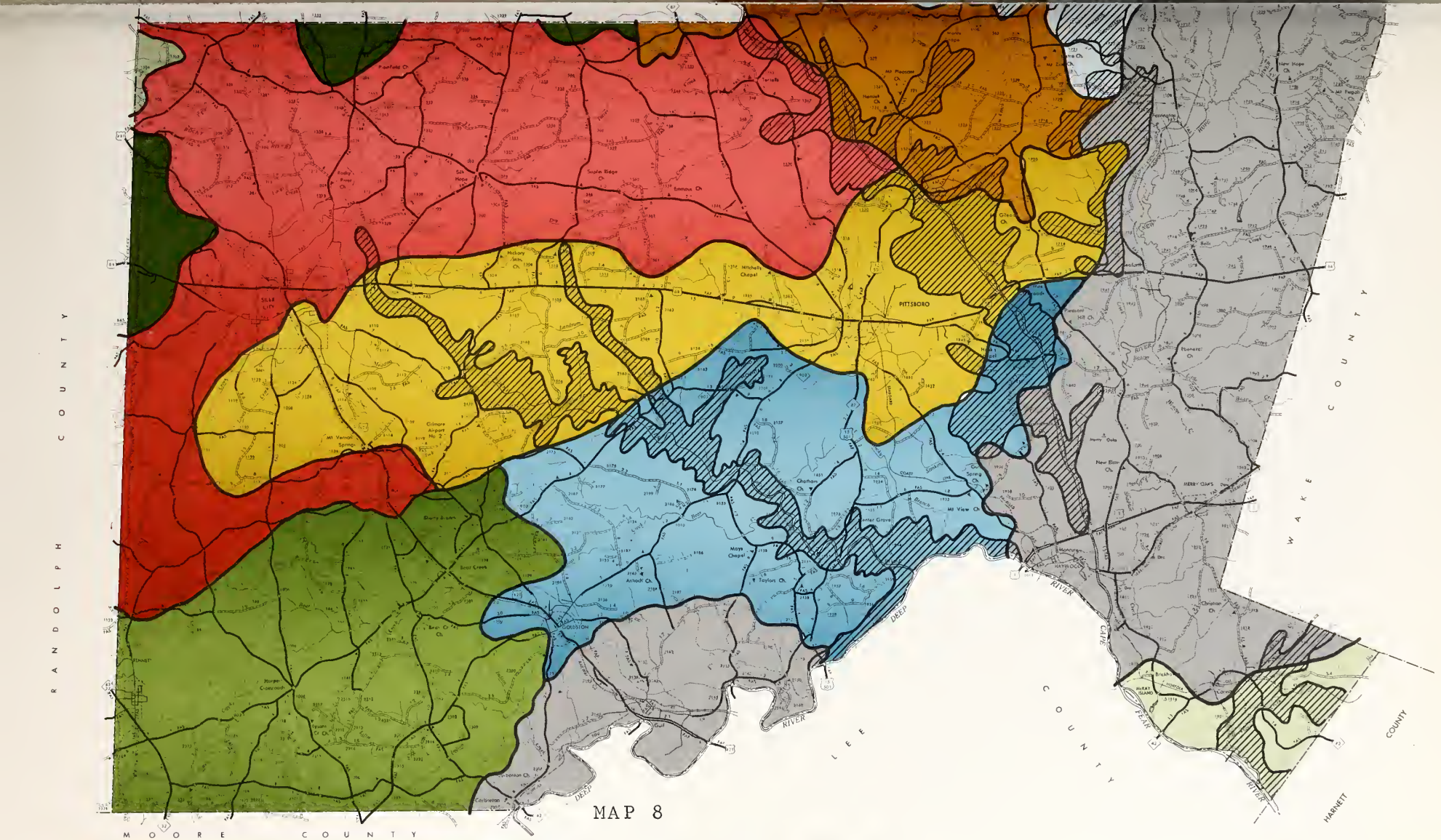
P - Percolation Rate

R - Rock

SS - Shrink-Swell Potential

NOTES: 1) Structures whose footings are in subsoil.

2) Refers to roads and streets that have subsoil for base.



MAP 8

GENERAL SOIL MAP

- GEORGEVILLE–HERNDON
- GEORGEVILLE–DAVIDSON
- TIMBERLAKE–HERNDON–
- TIMBERLAKE–HERNDON–GOLDSTON
- HELENA–APPLING–VANCE
- CECIL–APPLING
- WHITE STORE–CREEDMOOR
- APPLING–LOUISBURG
- IREDELL–ENON
- 10% SLOPE OR MORE

CHATHAM COUNTY

NORTH CAROLINA

N

SCALE

3. Recognize Potential Use Conflict Areas: If areas likely to generate potential use conflicts can be at least identified, the conflict may be avoided altogether. For example, a soil map may identify lands that are ideally suited for intense residential development but are presently in agricultural use. The governing body could thus permit only partial residential development in an effort to ward off undesirable encroachment on high quality agricultural soils. Once productive farming soil is used for other purposes, this invaluable natural resource can never be replaced.
4. Determine Prime Industrial Site Locations: In addition to the basic water, labor, and transportation needs necessary for industry, certain soil types are better suited for industrial construction than others. Soil maps can help in the choosing of major sites for industrial parks because they provide information related to the load bearing capacity of the soil and slope of the land.
5. Refine Broad Land Use Categories: In county development planning certain land areas can be classified "agriculture and idle land" for areas that are not earmarked for urbanization, conservation, or special needs. Soil maps will serve as prime resources for this operation.

TYPES OF SOIL

There are seventeen major soil types in Chatham County. The seventeen types were grouped by the Soil Conservation Service, U. S. Department of Agriculture, into nine soil associations representing groups of soils having similar characteristics. The nine different soil associations, their locations, and their major features including limiting development factors are briefly outlined as follows:

1) Georgeville-Herndon Association

This soil association occupies about 22 percent of the county and occurs in the north-central to northwestern portion. Georgeville soils make up about 40 percent of this association. They are deep, well drained soils. Herndon soils make up about 30 percent of this association. They are also deep, well drained soils. The remainder of this association consists of 5 percent Alamance, 5 percent Timberlake (Orange Variant), 5 percent Enon and 15 percent many other soils.

The farms in this association average 150 acres in size. Dairying, swine, beef, and small grain are the chief agricultural enterprises. Most of the land has been cultivated at some time. Presently about 20 percent is cultivated, 20 percent is in pasture, and 60 percent is in woodland or other uses. Georgeville and Herndon soils are well suited for the production of small grain, corn, soybeans and forage crops. The soils require lime and fertilizer for good crop production and respond well to added nutrients. These soils are easily tilled under favorable moisture conditions, and they have a good response to management. Erosion by water is the chief limitation to intensive use of the soils hence moderate conservation practices are required if they are cultivated.

The major soils in this association have moderate limitations for septic fields, foundations for buildings and road construction. The steep slopes in this association will have severe limitation for most uses.

2) Georgeville-Davidson Association

This soil association occupies about 17 percent of the county and occurs in the central portion from Pittsboro to Siler City. Georgeville and Davidson soils each make up about 40 percent of this association. They are deep, well drained soils. The remainder of this association consists of 10 percent Mecklenburg, 5 percent Herndon and 5 percent many other soils.

The farms in this association average 150 acres in size. Dairying, swine, beef, small grain and tobacco are the chief agricultural enterprises. Most of the land has been cultivated at some time. Presently about 20 percent is cultivated, 20 percent is in pasture, and 60 percent is in woodland or other uses. Georgeville and Davidson soils are well suited for the production of small grain, corn, soybeans and forage crops. The soils require lime and fertilizer for good crop production and respond well to added nutrients. These soils are moderately easy to till under favorable moisture conditions, and they give a good response to management. Erosion by water is the chief limitation to intensive use of the soils, hence moderate conservation practices are required if they are cultivated.

Georgeville soils have moderate limitations for septic tank filter fields, building foundations and road construction. Davidson soils have slight limitations for septic tank filter fields, moderate limitations for building foundations and severe limitations for road construction because of a low traffic supporting capacity.

3) Orange Variant (Timberlake)-Herndon-Orange Association

This soil association occupies about 13 percent of the county. It occurs in the southwestern portion of the county and in small areas of the northwestern portion. Orange Variant (Timberlake) soils make up about 40 percent of this association. They are moderately deep, moderately well drained soils. Herndon soils make up about 20 percent of this association. They are moderately deep, well drained soils. Orange soils also make up 20 percent of this association. They are moderately deep, moderately well drained soils. The remainder of this association consists of 5 percent Georgeville, 5 percent Goldston, 5 percent Enon, and 5 percent many other soils.

Poultry, pasture, corn, small grain, beef and dairying are the chief agricultural enterprises. Most of the land in the area has not been cultivated. Presently about 10 percent is cultivated,

10 percent is in pasture, and 80 percent is in woodland and other use.

Orange Variant (Timberlake) and Herndon soils are moderately to well suited for the production of corn, tobacco, small grains, soybeans and forage crops. Orange soils are poorly suited for these crops. Timberlake and Herndon soils require lime and fertilizer for good crop production and respond well to added nutrients. These soils are slightly difficult to till except under good moisture conditions. Timberlake and Herndon soils respond well to management. Erosion by water is the primary limitation to intensive use of all the soils in this association. Moderate conservation practices are needed if the soils are cultivated.

Orange Variant (Timberlake) and Orange soils have severe limitations for septic tank filter fields, foundations for buildings and road construction because of high shrink-swell potential, low traffic supporting capacity, and low bearing capacity when wet. Herndon soils have moderate limitations for these uses.

4) Timberlake (Orange Variant)-Herndon-Goldston Association

This soil association occupies about 14 percent of the county. It occurs in the south-central portion of the county. Timberlake (Orange Variant) soils make up about 30 percent of this association. They are moderately deep, moderately well drained soils. Herndon soils make up about 25 percent of this association and are also moderately deep, well drained soils. Goldston soils make up about 20 percent of this association. They are moderately shallow, well drained soils. The remainder of this association consists of 10 percent Georgeville, 5 percent Orange, and 10 percent many other soils.

The farms in this association average 150 acres in size. Dairying, swine and beef, poultry, grain and tobacco are the chief agricultural enterprises. Most of the land in the area has been cultivated at some time. Presently about 20 percent is cultivated, 20 percent is in pasture, and 60 percent is in woodland and other uses.

Timberlake and Herndon soils are well to fairly well suited for the production of tobacco, small grain, corn, soybeans and forage crops. Goldston soils are poorly suited for these crops. The soils in the Timberlake-Herndon-Goldston Association require lime and fertilizer for good crop production and respond well to added nutrients. The soils are tillable except under wet conditions. The major soils respond well to management. Erosion is the chief limitation to intensive use of these soils; moderate conservation practices are needed if they are cultivated.

Timberlake soils have severe limitations for septic tank filter fields, foundations for buildings, and foundations for roads due to slow percolation rate, high shrink-swell potential and low traffic supporting capacity when wet. Herndon soils have moderate limitations for these uses. Goldston soils have severe limitations for these uses because of shallow depths to bedrock.

5) Helena-Appling-Vance Association

This soil association occupies about 7 percent of the county and occurs in the northeastern portion. Helena soils make up about 35 percent of this association. They are deep or moderately deep, moderately well drained soils. Appling soils make up about 30 percent of this association. They are deep, well drained soils. Vance soils make up about 15 percent of this association, and are also deep, well drained soils. The remainder of this association consists of 5 percent Enon, 5 percent Mecklenburg, 5 percent Louisburg, and 5 percent many other soils.

The farms in this association average 140 acres in size. Dairying, poultry, beef, swine, corn, grain and tobacco are the chief agricultural enterprises. About 60 percent of the land has been cultivated at some time. Presently about 15 percent is cultivated, 15 percent is in pasture, and 70 percent is in woodland or other uses. The major soils in this association are moderately well suited for the production of corn, soybeans, and grain and well suited for tobacco. These soils require lime and fertilizer for good crop production and respond well to added

nutrients. The soils are easily tilled except under wet conditions or in places where erosion has been severe. They respond well to management. Erosion is the main limitation to their intensive use; moderate conservation practices are needed when cultivated.

Appling soils have moderate limitations for septic tank drainage fields, building foundations and road construction. Helena and Vance soils have severe limitations for these purposes because of slow permeability, high shrink-swell potential and low bearing capacity when wet.

6) Cecil-Appling Association

This soil association occupies about 2 percent of the county and occurs in the southeastern portion. Cecil soils make up about 70 percent of this association. They are deep, well drained soils. Appling soils make up about 15 percent of this association. They are deep, well drained soils. The remainder of this association consists of 5 percent Wilkes and 10 percent many other soils.

The farms in this association average 120 acres in size. Tobacco, beef, corn and grain production are the chief agricultural enterprises. Most of the land in the association has not been cultivated. Presently about 9 percent is cultivated, 1 percent is in pasture and 90 percent is in woodland or other uses. The major soils in this association are well suited for the production of corn, tobacco, small grain, soybeans and forage crops. These soils require lime and fertilizer for good crop production and respond well to added nutrients. The soils are moderately easy to till except under wet conditions. They respond well to management. Erosion by water is the main limitation to intensive use of the soils hence moderate conservation practices are needed when cultivated.

Cecil and Appling soils have moderate limitations for septic tank filter fields, building foundations and road construction.

7) White Store-Creedmore Association

This soil association occupies about 23 percent of the county. It occurs in the eastern portion and in one area south of Goldston. White Store soils make up about 55 percent of this association. They are moderately deep to deep, moderately well drained soils. Creedmore soils make up about 20 percent of this association. They are deep, moderately well drained soils. The remainder of this association consists of 5 percent Mayodan, 5 percent Granville, 5 percent Pinkston and 10 percent many other soils.

The farms in this association average 100 acres in size. Tobacco, forest, grain and corn are the chief agricultural enterprises. Most of the land has been cultivated at some time. Presently about 26 percent is cultivated, 4 percent is in pasture and 70 percent is in woodland or other uses. The major soils in this association are moderately well to well suited for the production of tobacco and moderately well suited for corn, grain and soybeans. These soils require lime and fertilizer for best crop growth and respond well to added nutrients. The soils are fairly easily tilled except under wet conditions. Erosion by water is the principal limitation to intensive use of the soils. Intensive conservation practices are needed when they are cultivated.

White Store and Creedmore soils have severe limitations for septic tank filter fields, foundations for buildings and road construction because of a high shrink-swell potential, low traffic supporting capacity and high potential erodability.

8) Appling-Louisburg Association

This soil association occupies about 2 percent of the county. It occurs in the northeastern part of the county adjacent to the Orange County line. Appling soils make up about 50 percent of this association. They are deep, well drained soils. Louisburg soils make up about 30 percent of this association. They are moderately deep, well drained soils. The remainder of this association consists of 5 percent Durham, 5 percent Vance, and 10 percent many other soils.

The farms in this association average 70 acres in size. Many of the farms are non-agricultural and used for housing developments or recreational areas. Livestock and tobacco production are the chief agricultural enterprises. Most of the land in the area has been cultivated at some time. Presently about 20 percent is cultivated, 10 percent is in pasture and 70 percent is in woodland and other uses. The major soils in this association are well suited for the production of tobacco and fairly well suited for the production of corn, small grain, soybeans and forage crops. These soils require lime and fertilizer for good crop production and respond well to added nutrients. They are easily tilled except under wet conditions. The major soils respond well to management. Erosion by water is the main limitation to intensive use of the soils. Moderate to intensive conservation practices are needed if the soils are cultivated.

Appling soils have moderate limitations for septic tank filter fields, building foundations and road construction. Louisburg soils have severe limitations because of shallow depths to rock.

9) Iredell-Enon Association

This soil association occupies less than 1 percent of the county. It occurs in the east north-central portion of the county adjacent to the Orange County line. Iredell soils make up about 60 percent of this association. They are moderately deep, moderately well drained soils. Enon soils make up about 15 percent of this association, and are moderately deep, well drained soils. The remainder of this association consists of 5 percent Mecklenburg, 5 percent Wilkes, and 15 percent many other soils.

Most of the land in the area has been cultivated at some time. Presently about 20 percent is cultivated, 20 percent is in pasture and 60 percent is in woodland and other uses. The major soils in this association are poorly suited for the production of most locally grown crops except for forage crops. These soils require lime and fertilizer for good crop production and respond

well to added nutrients. The soils are difficult to till except under favorable moisture conditions. Erosion by water is the principal limitation to intensive use of the soils. Intensive conservation practices are needed if the soils are cultivated.

Iredell and Enon soils have severe limitations for septic tank filter fields, building foundations and road construction because of slow permeability, high shrink-swell potential and low bearing capacity when wet.

SOIL LIMITATIONS

The previous descriptions show that different soils impose different limitations on future development in the county. The Soil Interpretation Table on page 46 describes in detail the suitability of soils in Chatham County for various types of development. Each association is rated for the following purposes: homes with sewerage systems, homes with septic tanks and drainage fields, camp sites, picnic areas, intensive play areas, light industries, roads and streets, general agriculture, and woodland. A key describing some of the limiting factors pertaining to the soil associations is located at the bottom of the table. The nature of these limitations for each type of potential development is discussed in the following paragraphs.

1) Limitations for Residential Development

Soils with limitations that hinder residential development exist predominantly in the southern and eastern portions of the county. The Soil Interpretation Table and the soil descriptions show that about 37 percent of the total soils in the county (Timberlake, Orange, Goldston, Helena, Vance, White Store, Creedmore, Louisburg, Iredell and Enon soils) have severe limitations for residential development due to shrink-swell potential of the soil, or the nearness of rock to the ground surface. Shrink-swell behavior is that quality of the soil that determines its volume change with a change in its moisture content. Much damage to building foundations, roads and other structures is due

to shrinking and swelling of soils as the result of drying and wetting. The volume change behavior of soils is influenced by the amount of moisture change and the kind of clay present in the soil.

These soils mentioned above have further severe limitations that hinder development of septic tank systems. Another 33 percent of the soil in the county (Georgeville, Herndon, Appling, and Cecil soils) has moderate limitations to the development of septic tanks. These limitations are due to poor percolation rates which are a measure of the downward movement of water through soil, especially the downward flow of water in saturated or nearly saturated soil. Experience has shown that soils having a percolation rate: (1) faster than 45 minutes per inch function satisfactorily; (2) between 45 and 75 minutes per inch have moderate limitations; and (3) slower than 75 minutes per inch have severe limitations when used as filter fields for septic tanks. Moderate limitations due to percolation rates do not mean that residential development cannot exist, but rather that if septic tanks are to be used it should occur at a very low density to avoid pollution of the soil and water supplies. Subdivision development is not recommended in these areas unless lots large enough to support septic tank fields (a minimum area of one to two acres per lot) are provided. If sewerage systems are used in conjunction with a central waste treatment plant, the limitations of percolation rates are easily overcome.

2) Limitations for Recreation Areas

Soils adaptable for recreational purposes are prevelent throughout the county, although the intensity of use must be limited in several areas due to limited trafficability of the soil. Trafficability of the soil is a measure of the ease with which people can move about on foot, horseback, or in small vehicles (such as golf carts). Soils with poor trafficability will be slippery or provide unsure footing. Limitations of trafficability do not depend on the slope of the land since trafficways

may be built on the contour. Steep slopes, however, do not make good sites for camping or intensive recreation. They may be advantageously developed in open space reserves for hiking, climbing, and wildlife preserves.

3) Limitations to Transportation and Industrial Development

Industrial, commercial and transportation development are all directly related to one another in their need for favorable soil characteristics. Structures for these uses have their foundations in the subsoils where shrink-swell behavior of the soil is a limiting factor. As was mentioned under residential limitations, shrinking and swelling of the soil, resulting from drying and wetting, causes damage to building foundations, roads and other structures. Shrink-swell limitations exist in all Chatham County soils, varying in degree from moderate to severe, depending on the amount of moisture and distribution of clay present in the soil. Streets and roads are also limited by the susceptibility of the soil to erosion. A soil's erodability is its lack of resistance to flowing water. This limitation also exists in all Chatham County soil. It is difficult to correlate the rate of erosion with a single physical property, but texture is an important factor with respect to its effect on determining the aeration, moisture holding capacity, and water movement properties. Erosion of roads may be limited by seeking the better subsoils for bases, water proofing the road surfaces, limiting the grades of roads and drainage ditches, providing adequate drainage structures, and planting road cuts, filled banks and drainage ditches with grass or other dense vegetation.

4) Limitations to Agriculture and Woodlands

Few limitations are noted for agricultural or woodland development. Orange and Goldston soils are poorly suited for agriculture. Erodability is a limitation to intensive cultivation in all soils, but it is a particularly severe limitation in the White Store-Creedmore, Appling-Louisburg, and Iredell-Enon

Soil Associations where intensive conservation practices are needed for cultivation. These soils are better adapted to use for woodlands than for general agriculture.

The overall limitations of the soil for agricultural uses may be noted by land capability classification. This classification in Chatham County is summarized in Table 4 on the following page. In this classification the arable soils are grouped according to their potentialities and limitations for sustained production of the common cultivated crops that do not require specialized site conditioning or site treatment. Nonarable soils (soils unsuitable for longtime sustained use for cultivated crops) are grouped according to their potentialities and limitations for the production of permanent vegetation and according to their risks of soil damage if mismanaged.

The capability classification is shown on detailed soil maps by the individual mapping unit of a particular soil. Detailed soil maps of Chatham County have only been prepared for the Siler City area. The general soil map of the county does not include the specific detail of particular soils. Capability classification in Chatham County was accomplished by a Conservation Needs Inventory. This inventory, taken in 1958 and again in 1966 by the North Carolina Conservation Needs Committee, estimated by statistical sampling the amount of land in each capability class and capability subclass.

The broadest category in the capability classification places all the soils in eight capability classes. The risks of soil damage or limitations in use become progressively greater from Class I to Class VIII. Soils in the first four classes are capable under good management of producing adapted plants, such as forest trees or range plants, and the common cultivated field crops and pasture plants. Soils in Classes V, VI, and VII are suited to the use of adapted native plants. Some soils in Classes V and VI are also capable of producing specialized crops, such as certain fruits and ornamentals, and even field and vegetable crops under highly intensive management involving

TABLE 4

USE OF AGRICULTURAL LAND ACREAGE BY CAPABILITY CLASS AND SUBCLASS[1]
CHATHAM COUNTY, 1958 AND 1966

CLASS	CROPLAND		PASTURE-RANGE		FOREST-WOODLAND		OTHER LAND		TOTAL	
	1958	1966	1958	1966	1958	1966	1958	1966	1958	1966
	1,000 Acres	1,000 Acres	1,000 Acres	1,000 Acres	1,000 Acres	1,000 Acres	1,000 Acres	1,000 Acres	1,000 Acres	1,000 Acres
II	40.3	23.7	9.3	10.5	67.7	59.9	5.8	6.9	123.1	101.0
E	39.7	23.7	8.5	9.7	61.3	57.7	5.6	6.9	115.1	98.0
W	.6	0	.8	.8	6.4	2.2	.2	0	8.0	3.0
III	25.2	17.1	10.9	10.3	114.3	112.4	5.2	1.5	155.6	141.3
E	25.1	17.0	10.0	10.1	106.4	99.8	4.8	1.3	146.3	128.2
W	.1	.1	.9	.2	7.7	12.4	.4	.2	9.1	12.9
S	0	0	0	0	.2	.2	0	0	.2	.2
IV	8.6	9.6	3.7	6.5	107.7	99.6	4.1	1.5	124.1	117.2
E	8.0	9.1	3.7	5.9	84.9	76.5	4.0	1.5	100.6	93.0
W	.6	.5	0	.6	22.8	23.1	.1	0	23.5	24.3
I-IV	74.1	50.4	23.9	27.3	289.7	271.9	15.1	9.9	402.8	359.5
VI	.1	3.6	.2	1.5	14.6	51.5	.2	0	15.1	56.6
E	.1	3.6	.2	1.5	14.6	51.5	.2	0	15.1	56.6
VII	1.3	0	1.0	1.0	26.6	20.2	.2	0	29.1	21.2
E	1.3	0	1.0	1.0	26.6	20.2	.2	0	29.1	21.2
V-VII	1.4	3.6	1.2	2.5	41.2	71.7	.4	0	44.2	77.8
TOTAL	75.5	54.0	25.1	29.8	330.9	343.6	15.5	9.9	447.0	437.3

[1] Figures shown for each class are totals of figures for respective subclasses. If a class or subclass is not indicated, there is no land in this classification in the county.

Source: North Carolina Soil and Water Conservation Needs Inventory, U. S. Department of Agriculture, North Carolina Conservation Needs Committee, 1962 and 1970.

elaborate practices for soil and water conservation. Soils in Class VIII do not return onsite benefits for inputs of management for crops, grasses, or trees.

The second category in the classification is the subclass. This is a grouping of capability units having similar kinds of limitations and hazards. Three kinds of limitations or hazards are recognized in North Carolina: (1) erosion hazard, (2) wetness, and (3) soil limitations in the root zone.

There are no Class I soils in Chatham County. The best soils for agriculture in the county are Class II. Soils in Class II have some limitations that reduce the choice of plants or require moderate conservation practices. Soils in this class require careful soil management, including conservation practices, to prevent deterioration or to improve air and water relations when the soils are cultivated. The limitations are few and the practices are easy to apply. The soils may be used for cultivated crops, pasture, range, woodland, or for wildlife food and cover.

Limitations of soils in Class II may include singly or in combination the effects of (1) gentle slopes; (2) moderate susceptibility to wind or water erosion, or moderate adverse effects of past erosion; (3) less than ideal soil depth; (4) somewhat unfavorable soil structure and workability; (5) occasional damaging overflow; and (6) wetness correctible by drainage but existing permanently as a moderate limitation.

There were 123,100 acres of Class II soils in Chatham County in 1958. In 1966, there was only 101,000 acres of Class II soil. Similar losses of good agricultural land were noted in Classes II, III and IV soils.

Subclasses, within classes, are groups of capability units that have the same kinds of dominant limitations for agricultural use as a result of soil and climate. Some soils are subject to erosion if they are not protected, while others are naturally wet and must be drained if crops are to be grown. Some soils are shallow or droughty, or have other soil deficiencies.

Subclass (e) (erosion) is made up of soils where the susceptibility to erosion is the dominant problem or hazard in their use. Erosion susceptibility and past erosion damage are the major soil factors for placing soils in this subclass.

Subclass (w) (excess water) is made up of soils where excess water is the dominant hazard or limitation in their use. Poor soil drainage, wetness, high water table, and overflow are the criteria for determining which soils belong in this subclass.

Subclass (s) (soil limitations in the root zone) is made up of soils where root-zone limitations are the dominant hazard or limitation in their use. These limitations are the results of such factors as shallow soils, stoniness, low moisture-holding capacity, and low fertility difficult to correct.

The dominant kind of limitation of hazard to the use of the land determines the assignment of capability units to the (e), (w), and (s) subclasses.

SOIL ASSOCIATIONS: SOME BRIEF CONCLUDING REMARKS

The Georgeville-Herndon and Georgeville-Davidson Associations run parallel to Highway U. S. 64, the main east-west route through Chatham, and extend over a large portion of the north-central and northwest portion of the county. (Albright, Center, Hadley, Hickory Mountain, and Matthews Townships.) These particular associations, 39 percent of the county total, are the best soils in Chatham and rate extremely high for residential and agricultural uses. Within the Georgeville-Herndon and Davidson Associations lie the two major cities of Chatham County - Siler City and Pittsboro. Not surprising is the fact that these soils are among the best for industry in Chatham. Intense development has not yet taken place along U. S. 64 between Siler City and Pittsboro - but this is an area of prime potential for industrial and residential expansion in Chatham County.

The Timberlake-Herndon-Orange, Timberlake-Herndon-Goldston, and Helena-Appling-Vance Soil Associations are located in Bear

Creek, Gulf, and Baldwin Townships respectively, in the southwestern, south-central, and north-central portions of the county. These soil associations compose 39 percent of the total in the county and are generally poor for industrial and residential development, but rate higher for agricultural, recreational, and woodland uses.

The White Store-Creedmore Association, found in the entire eastern section of the county next to Wake County (Cape Fear, New Hope, and Williams Townships) and also in the south-central portion of Chatham near the Town of Gulf and next to Lee County (Gulf Township), is basically a poor soil for development. While this land is presently about 23 percent of the total in the county, a large portion of it (approximately 50 percent) will be inundated in the early 1970's when the New Hope Reservoir Project is completed. Unquestionably the best uses for this soil is for woodland and various recreational pasttimes. County parks with picnic areas and campgrounds would be ideal for this type of land. Recreational development should be planned in conjunction with the reservoir project and closely coordinated with the Army Corps of Engineers proposals.

Cecil-Appling, Appling-Louisburg, and Iredell-Enon Soil Associations comprise less than 5 percent of the soils within the county. Specific recommendations regarding the use of these soils would be insignificant to the total county land potential picture. However, it should be apointed out that the Cecil-Appling category contains good soils for all the general soil interpretation categories. Within the Cecil-Appling Soil Association is the unincorporated Town of Corinth - a virtually untapped area that has a great deal of potential. Corinth lies a few miles from the actual New Hope Dam site and just downstream from the Carolina Power and Light power plant near Moncure. The Cecil-Appling Association in Cape Fear Township should be explored in more detail for industrial site development.

Sources: North Carolina Soil and Water Conservation Needs Inventory, U. S. Department of Agriculture, N. C. Conservation Needs Committee, February, 1962. (Revised Inventory to be published in 1970.)

Chatham County Soil Survey, U. S. Department of Agriculture, Soil Conservation Service, 1968.

Soil and Land Use Planning, General and Operational Soil Surveys and Their Application in Land Use Planning, A. J. Klingelhoets, American Society of Planning Officials, 1966, Chicago.

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GEOLOGY

Geological features merit examination in a Land Potential Study because the type and structure of rock formations determine the availability of ground water and the land uses man can establish on the earth's surface. An in depth technical study of the geological periods, rock formations and ground water of Chatham County can be found in the Geology and Ground Water in the Durham Area, North Carolina, published by the North Carolina Department of Water Resources, 1966. For purposes of this Land Potential Study, a brief examination of the geological features will be presented.

The rocks in Chatham County are classified into three major rock groupings: 1) metavolcanic rocks, 2) igneous rocks, and 3) sedimentary rocks (Triassic rocks).

Metavolcanic rocks consist of the Carolina Slate Belt group: bedded argillites, mafic volcanics and felsic volcanics. As shown by the Geologic Map on the following page, the metavolcanic rocks are located in the entire western and central portions of Chatham County. Metavolcanic rocks generally contain a high percentage of quartz and are quite resistant to weathering. The water yield per minute from wells dug or drilled into metavolcanic rocks generally is poor and averages only 7.3 gallons per minute. On the average, bedded argillites yield 5.0 gallons of water per minute. Soils overlying mafic rocks are good for general agricultural use.

Igneous rocks in Chatham County occur in the form of granite and appear just to the north of Bynum and extend over a wide area into Orange County (see map). The topsoil over granite rock is very shallow. The water yield per minute from wells dug or drilled into granite rock is the highest in Chatham County; an average of 8 gallons per minute.

The Triassic rock group occurs over the entire eastern portion of Chatham County. Generally soils formed from Triassic rocks are poor for agricultural uses and have a low porosity and

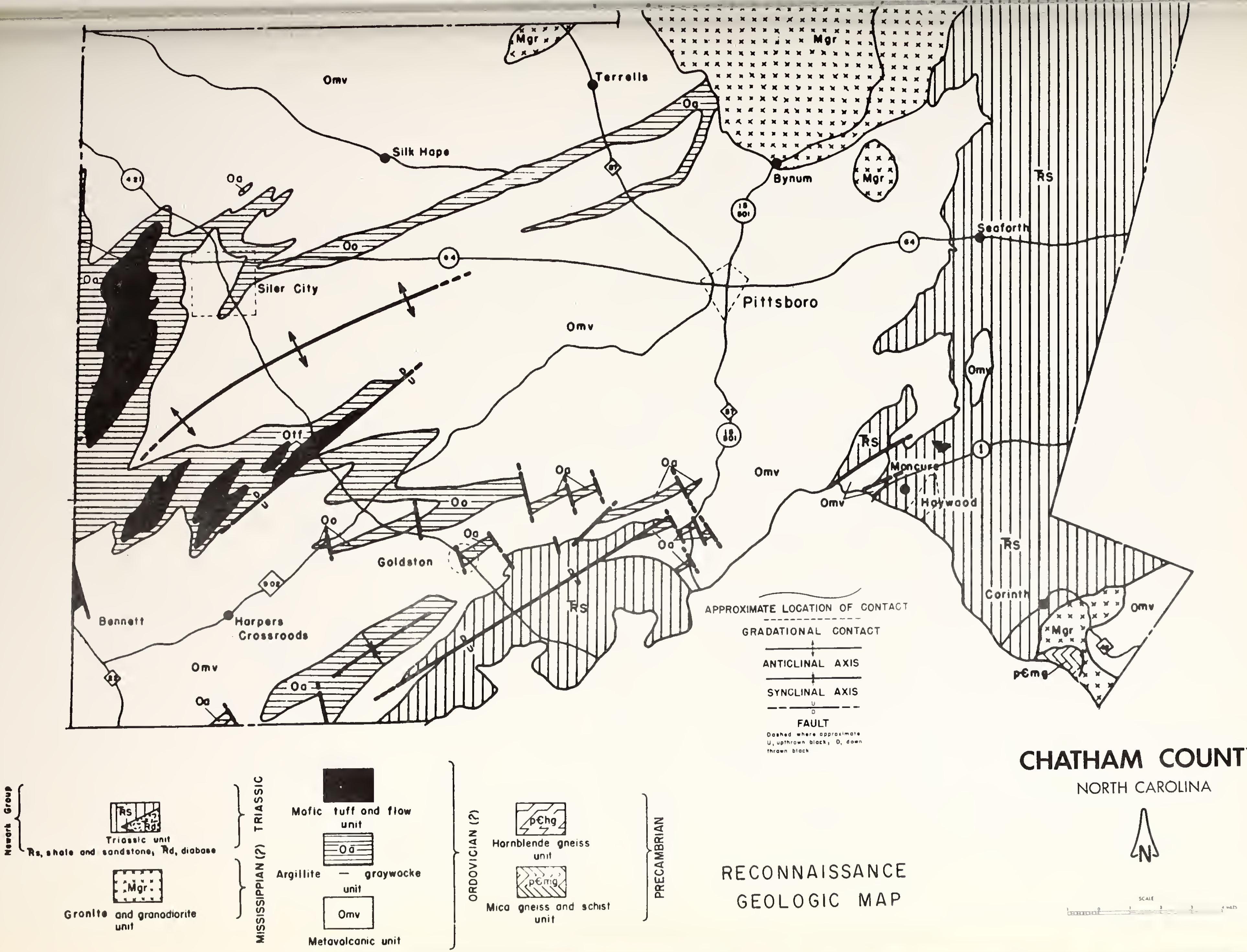
permeability rate. A low porosity and permeability rate means that the yield from wells dug or drilled will be poor. (For Chatham County, an average of 6.7 gallons per minute). Water taken from Triassic bedrock has a high mineral content.

The entire eastern portion of Chatham County is a topographic low. This topographic low was caused by movement within the earth's crust and has resulted in a down-faulted area. The rocks that occur in the eastern portion (topographic low) of Chatham County are the Triassic rock. Triassic rocks have decomposed to form the White Store-Creedmore soil. White Store-Creedmore soil has a high shrink-swell potential and therefore is generally not acceptable for residential or industrial development.

The load bearing capabilities of metavolcanic, igneous, and Triassic rocks are generally very high and do not present any severe construction obstacles. However, individual sites being considered for major construction will require extensive test borings and vibration studies in order to determine the supporting capabilities of the underlying rock formations. As in the case of a General Soil Map, a Generalized Geological Map will not provide a person with detailed information about a particular site.

Sources: Geology and Ground Water in the Durham Area, North Carolina, Ground Water Bulletin Number 7, North Carolina Department of Water Resources, May, 1966.

Interview with Stephen G. Conrad, State Geologist, Department of Conservation and Development, Division of Mineral Resources.



RECONNAISSANCE GEOLOGIC MAP

CHATHAM COUNTY

NORTH CAROLINA

TOPOGRAPHY AND DRAINAGE

TOPOGRAPHY

The topography of Chatham County is similar to that of other counties in the Piedmont Crescent. The upland surface generally slopes toward the southeast (Cape Fear Watershed) and is dissected by southeastward flowing streams. The topography is generally rolling and therefore the porosity (degree by which water can pass through rocks) and consistency of the lower soil strata provides excellent surface and subsoil drainage.

The highest elevations in the county occur along a northeastern ridge between Siler City and Pittsboro and on the ridge between Bynum and Chapel Hill. The lowest altitude in the county is along the Cape Fear River on the Chatham-Harnett County line. Generalized topographic information is shown on Map #17 on the following page.

The United States Geological Survey has not prepared detailed topographic maps of Chatham County. Topography maps provide information about the relief of land on the earth's surface, land elevations of different areas, and drainage characteristics of streams and their tributaries. Because of the invaluable nature of this type of information for all development considerations, the County Commissioners should press for the early completion of topographic map coverage for the entire county.

DRAINAGE

Chatham County is dissected by many streams which form a dendictic (tree-like shape) drainage pattern. The principal drainage is in a southerly and easterly direction.

The main drainageways are the New Hope and Haw River in the eastern part of the county and Rocky and Deep Rivers in the western portion. Most of the major streams have a continuous flow of water except during extremely dry periods.

As shown on Map #1 on page five, floodplains are not extensive in the county. They occur next to the major streams and

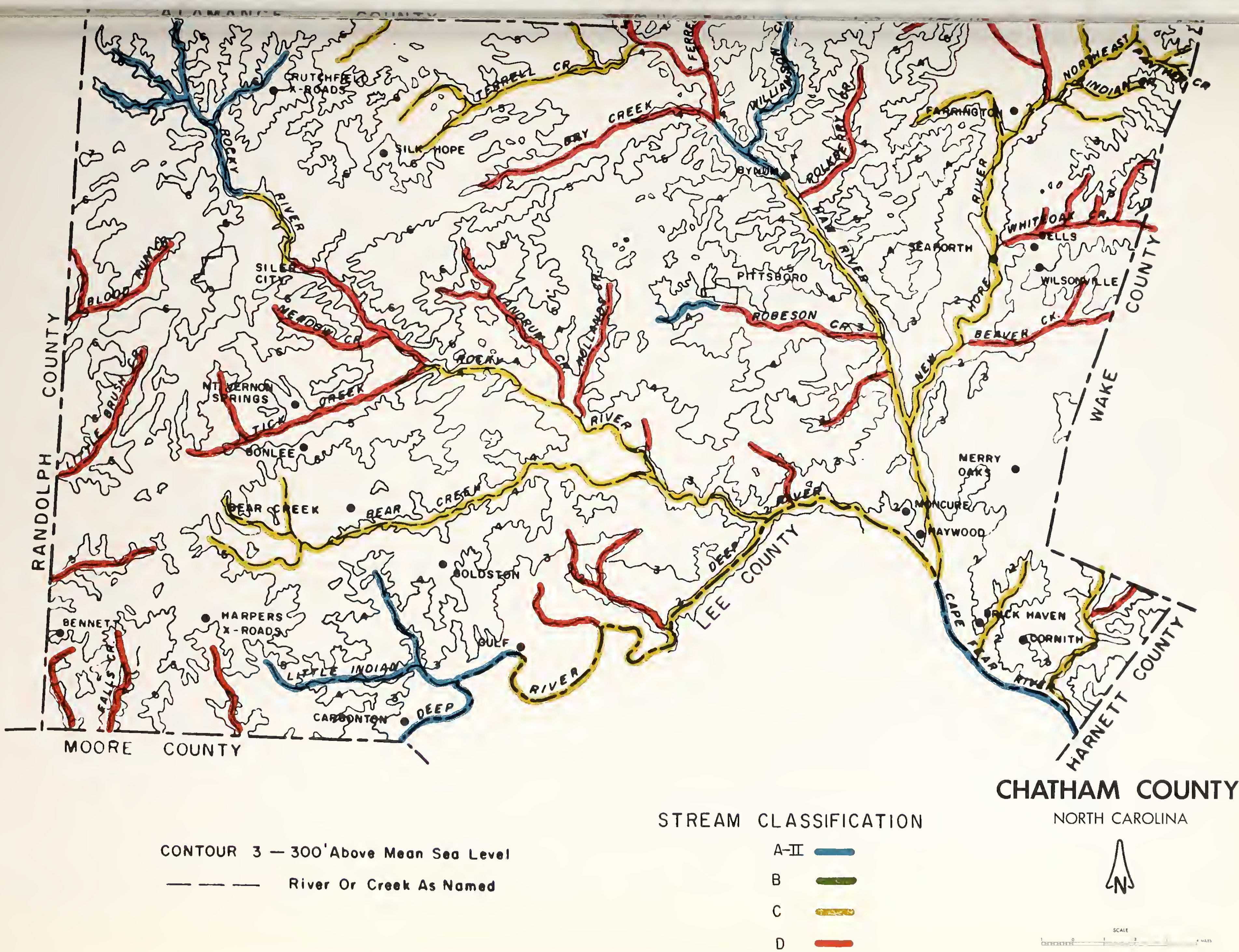
creeks, and are usually very narrow. The widest floodplains have been on the New Hope River. All of the floodplains in the county are, of course, subject to periodic flooding.

While every floodplain is not flooded each year, there is a greater probability that a floodplain may be flooded at least once every ten years. The New Hope Reservoir has been designed as a flood control project to contain the largest flood on the New Hope River that might occur during a fifty year period. The Reservoir is discussed in more detail in a later section of this study.

Some flood control for the Deep River is to be provided by the proposed Randleman and Howards Mills Reservoirs in Randolph County, although these projects are not yet funded for pre-construction planning and are not expected to be completed for several years. Even with all three flood control reservoirs in operation, the possibility of problems from flooding will still exist on the uncontrolled tributaries to these major rivers.

The problems of flood damages may be prevented by planning to keep development from occurring in floodplain areas. Development may be limited or excluded by floodplain zoning, public purchase of development easements or by public purchase of the land for open space reservation. Land in floodplains may be safely used for parks, parking areas, playfields, wildlife refuges, and open space reserves. This land should not be used for homes, commercial areas or industrial sites. It is possible to keep people out of the paths of floods, and much less expensive to do so than to try to assist them with their losses following a flood. It is almost impossible to keep floods out of the path of people--and painfully expensive to try to do so.

Source: Geology and Ground Water in the Durham Area, North Carolina, Ground Water Bulletin Number 7, North Carolina Department of Water Resources, May, 1966.


CHATHAM COUNTY
NORTH CAROLINA
STREAM CLASSIFICATION
A-II
B
C
D
CONTOUR 3 — 300' Above Mean Sea Level
River Or Creek As Named
SCALE
MOORE COUNTY
RANDOLPH COUNTY
WAKE COUNTY
LEE COUNTY
HARNETT COUNTY
CRUTCHFIELD X-ROADS
SILK HOPE
SILER CITY
MT. VERNON SPRINGS
BONLEE
BEAR CREEK
GOLDSTON
BENNETT
HARPERS X-ROADS
GULF
CARBONTON
PITTSBORO
BYNUM
SEAFORTH
FARRINGTON
BELLS
WILSONVILLE
MERRY OAKS
MONCURE
HAYWOOD
BRICK HAVEN
CORINTH
ROCKY RIVER
TERRELL CR
DRY CREEK
WILLIAMSON CR
ROBESON CR
HAW RIVER
NEW HOPE RIVER
WHITEOAK CR
BEAVER CK
NORTHEAST
INDIAN CR
MEADOW CR
TICK CREEK
BRUSH CR
BLOOD RUN CR
FALLS CR
LITTLE INDIAN
DEEP RIVER
BEAR CREEK
CAPE FEAR RIVER
LANDRUM CR
HOLLANDS CR
FERRELL CR

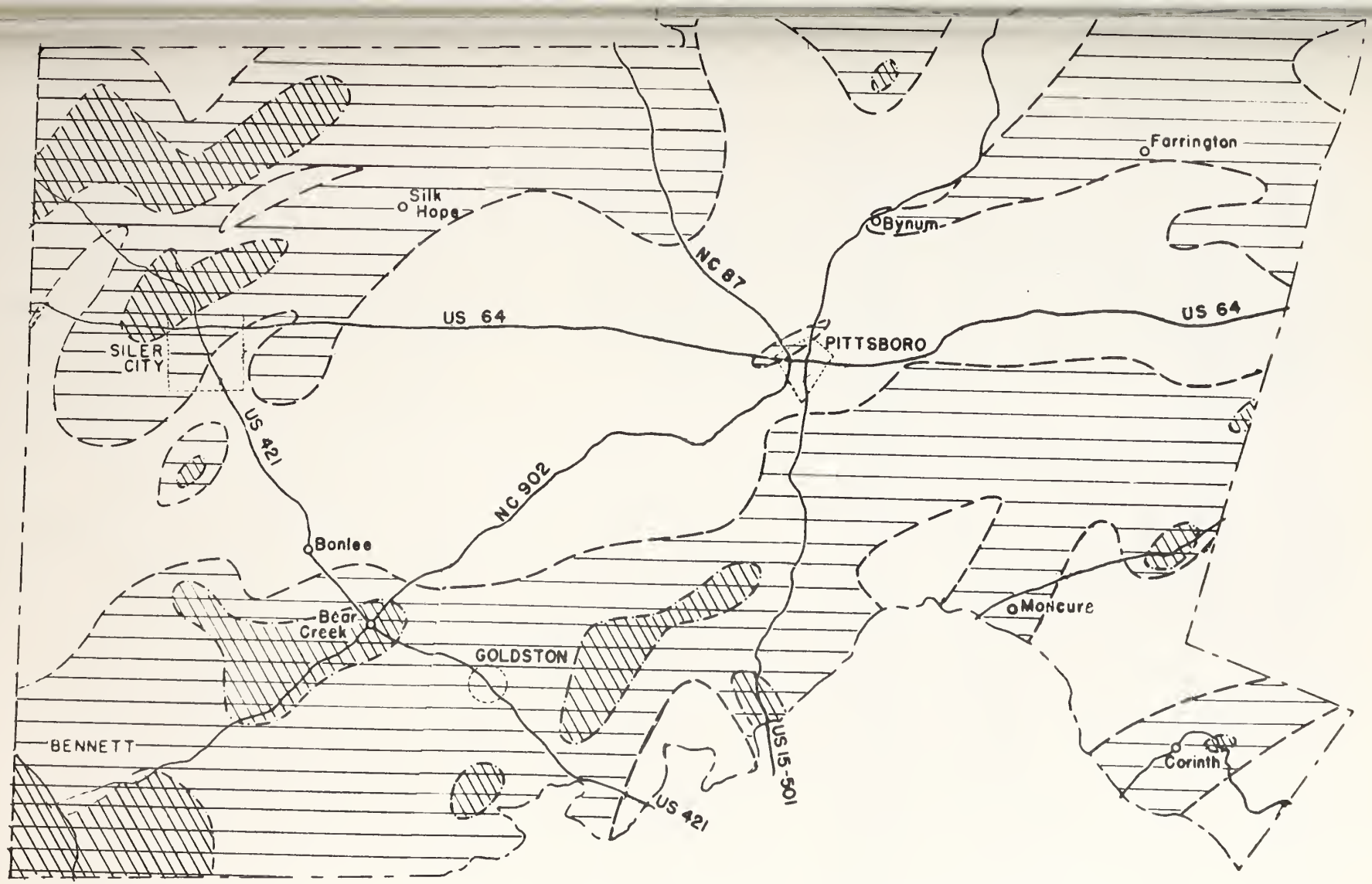
WATER RESOURCES

GROUND WATER

All ground water was once precipitation which fell in the form of rain or snow. The earth contains a vast but fixed supply of water. The sun evaporates water from the oceans, lakes, streams, and surface of the earth to become water vapor in the atmosphere. There water vapor condenses and falls as precipitation. Part of the water falling upon the land surface is discharged directly to streams as surface runoff, part is returned to the atmosphere by evaporation, and the remainder is retained in the soil and rocks as ground water. Ground water is eventually released to streams through springs, seeps, and wells, and is returned to the atmosphere. This circulation of water between the earth and the atmosphere is known as the hydrologic cycle.

Geological structures play an important role in establishing the quality and quantity of ground water. The underlying rock formations determine the degree of difficulty in bringing the ground water to the surface as well as the impurities and mineral content to the found in the water. Table 5 illustrates the water yields from the various categories of rock formations in Chatham County. The areal distribution of ground water yield per foot of well depth is shown by Map #18 on the following page.

All water used for domestic and industrial purposes in Chatham County is obtained from wells or springs except in the Towns of Pittsboro, Siler City, and Gulf, which utilize surface water. Most dug wells obtain their water from the soil and decomposing rock layer and frequently go dry during periods of drought. Drilled wells obtain their water from bedrock (fractures, planes of schistosity and other secondary openings in the bedrock). As the drilled wells obtain their water from some depth below the water table (upper limit of the soil that is saturated with water) they are more dependable sources of water than dug wells--which obtain their water directly from the upper part of the water table.



YIELD EXCEEDS 0.10 GALLON PER MINUTE PER FOOT OF UNCASED HOLE

YIELD IS LESS THAN 0.10 GALLON PER MINUTE PER FOOT OF UNCASED HOLE

YIELD IS LESS THAN 0.02 GALLON PER MINUTE PER FOOT OF UNCASED HOLE

GEOLOGY & GROUND-WATER
AREAL DISTRIBUTION
OF
YIELDS PER FOOT OF DEPTH

CHATHAM COUNTY

NORTH CAROLINA

N

SCALE

TABLE 5

SUMMARY OF WELL DATA IN CHATHAM COUNTY ACCORDING TO ROCK TYPE

MAP UNIT	Number of Wells	Yield (Gallons Per Minute) Average	Yield (Gallons Per Minute) Per Foot of Well	Average Depth (Feet)
Granite	21	8.0	0.12	68.1
Triassic	64	6.7	.07	97.7
Bedded Argillites	17	5.0	.04	123.4
Mafic and Felsic Volcanics	120	7.3	.07	99.2

Average water level in Chatham County is 24.2 feet below land surface.

Source: Geology and Ground Water in the Durham Area, North Carolina, Ground Water Bulletin Number 7, North Carolina Department of Water Resources, Raleigh, N. C., 1966, p. 70.

Ground water resources within Chatham County are not plentiful enough to supply municipalities or large industries. The wells of Chatham County are suitable for individual farms or small subdivisions and usually yield between 1 and 8 gallons per minute, as noted above. Only about 20 percent of the wells yield more than 10 gallons per minute.

QUALITY OF GROUND WATER

Ground water in Chatham County is principally of the calcium and sodium bicarbonate types and is suitable for most domestic, industrial, and municipal purposes. Calcium and sodium chloride waters are present at some localities in the county.

Iron ranges from 0.00 to 5.0 parts per million (p.p.m.). Fifty percent of the wells analyzed for iron had iron concentrations below the 0.3 p.p.m. maximum recommended by the U. S. Public Health Service. Chloride ranged from 0.2 p.p.m. to 384 p.p.m. Eighty percent of the wells sampled had chloride concentrations below the 250 p.p.m. maximum limit recommended by the Public Health Service.

There is not enough information available from wells dug in Chatham County to say specifically that wells in any particular area will produce good or poor water or a large or small quantity. There are some generalizations that may be made. Wells in the Triassic Basin (the southeast portion of the county) are generally poorer than those outside the Triassic area. In the Gulf area, large quantity wells tend to be of poorer quality than low quantity wells. Deep wells in general have a better chance of being salty than do shallow wells, since there is more chance of a deep well hitting a layer of salt. Shallow wells have a greater chance of being polluted if septic wastes are allowed to run off in ground water nearby. The best information about the potential for wells at a specific site may be sought from nearby well-owners or experienced well-drillers familiar with the area.

SURFACE WATER

The surface water of Chatham County is provided by the Deep, Haw, New Hope and Rocky Rivers and their tributaries. The Deep River joins with the Haw River near Moncure to become the Cape Fear River.

The amount of surface water available in Chatham County far exceeds the demand. Surface water records from stream gaging stations in Chatham County show that the average daily flow of water through the county is about 2,000 million gallons per day. Some typical urban demands for water supplies are 18.5 million gallons per day for 125,000 people in Greensboro, 8.7 million gallons per day for 36,000 people in Burlington and 1.6 million gallons per day for 5,900 people in Siler City. This apparent abundance of surface water in Chatham County might lead one to believe there would be enough water to supply a city of over one million people. However, figures showing average water supplies and demands can be misleading. Water supplies must be adequate not only for the day of average demand, but also for the day of peak demand. Reserve supplies must also be

available to maintain pressure in municipal distribution systems and for emergency fire-fighting supplies. Similarly, we cannot depend on the average supply from a river, but must consider the minimum supply recorded in periods of drought. Table 6 shows the differences between average flows and low flows at three stream gaging stations of the U. S. Department of the Interior Geological Survey located in Chatham County.

TABLE 6

STREAM GAGING STATION RECORDS IN CHATHAM COUNTY, N. C.
(In cubic feet per second, c.f.s.,
and million gallons per day, m.g.d.)

Gaging Station Number	970		980		1020	
Location	Haw River near Pittsboro		New Hope River near Pittsboro		Deep River at Moncure	
Recorded Period	Oct. 1928 - Sept. 1964		Jan. 1949 - Sept. 1964		July 1930 - Sept. 1964	
	c.f.s.	m.g.d.	c.f.s.	m.g.d.	c.f.s.	m.g.d.
Average Discharge	1,248	806	282	182	1,447	935
Maximum Discharge	79,000	51,060	7,900	5,106	80,330	51,900
Minimum Discharge	3.1	2.0	2.0	1.3	5.5	3.6
Min. Daily Discharge	5.3	3.4	n.a.	n.a.	n.a.	n.a.
Water Year 63-64	c.f.s.	m.g.d.	c.f.s.	m.g.d.	c.f.s.	m.g.d.
Average Discharge	1,027	664	311	201	1,651	1,067
Maximum Discharge	18,300	11,828	4,510	2,915	33,000	21,328
Max. Daily Discharge	11,600	7,497	4,260	2,753	24,600	15,900
Minimum Discharge	8.9	5.8	8.2	5.3	45	29.1
Min. Daily Discharge	16	10.3	8.8	5.7	47	30.4

n.a. - data not available

Source: Surface Water Records of North Carolina, 1964, U. S. Department of the Interior Geological Survey - Water Resources Division.

The Haw River Gaging Station is downstream from the water intake for Pittsboro's Treatment Plant Number 2 and provides a good indicator of the water supply available for this plant. The

plant presently uses 250,000 gallons per day and can expand to a capacity of 500,000 gallons per day. The lowest one day flow in this river over a 36 year period was 3.4 million gallons, almost seven times the maximum capacity of Pittsboro's treatment facilities.

The Deep River Gaging Station at Moncure measures the total flow of the Deep River below the Rocky River confluence. The Goldston-Gulf Sanitary District uses some of this water from the Deep River and Siler City uses some of the Rocky River water. The location of this gaging station does not provide a good indicator of the water available to either Goldston-Gulf or Siler City. It does indicate that a very large supply of water is available to the Moncure area with the lowest flow in 34 years having been at a rate of 3.6 million gallons per day. This source would be a more than adequate supply for the development of a Sanitary District in the Moncure area.

Future demand for water in Chatham County has been estimated by L. E. Wooten and Company, Consulting Engineers, in their Water and Sewer Planning Report for Chatham County. These estimates, shown in Table 7, reflect increasing population, increased demand per capita for water, and expansion of water supply systems into suburban and rural areas.

L. E. Wooten and Company estimated that the Siler City area average water demand in 1990 would exceed the available supply from existing storage and natural river runoff by 650,000 gallons per day. In dry periods or on days of maximum demand, this deficit would be much greater. Even if the supply were adequate, the Siler City treatment facilities (4 million gallons per day capacity) would be insufficient to meet the 1990 demand for 4.73 million gallons per day.

Pittsboro's water supply from the Haw River will be adequate in 1990 for the city and area demands, but the storage and treatment facilities will need expansion from a present capacity of 750,000 gallons per day to 5 million gallons per day. The Goldston-Gulf water supply from the Deep River will also be

TABLE 7

ESTIMATE OF 1990 DEMAND FOR TREATED WATER
CHATHAM COUNTY, N. C.

Area	Average Demand (gallons)	Maximum Demand (gallons)
Siler City	2,205,000	3,311,000
Siler City Suburban Area, incl. Mt. Vernon Springs and Bonlee	945,000	1,419,000
Pittsboro	960,000	1,440,000
Pittsboro Suburban Area, incl. Bynum and Haywood-Moncure	2,040,000	3,160,000
Goldston-Gulf Area incl. Bennett	310,000	620,000
Total 1990 Demand	6,460,000	9,950,000

Source: Water and Sewer Planning Report for Chatham County, L. E. Wooten and Company, Raleigh, North Carolina, 1968.

adequate in 1990 for area demands, but treatment facilities will need to be increased from the present 500,000 gallon capacity to 1 million gallons per day.

L. E. Wooten and Company recommended that these needs for future water supply and treatment be met by the development of a County Water Filtration Plant and a county-wide system of water mains that would tie together and supplement the existing city systems and sanitary district. This system would draw needed supply from the New Hope Reservoir being developed east of Pittsboro and provide up to 10 million gallons of treated water per day to supplement improvements to the present facilities in Pittsboro, Siler City and Goldston-Gulf. This system, if implemented, will provide more than adequate water supplies to the areas in Chatham County that already have good roads and good soils, encouraging urban growth in desirable areas. If the county does not implement the recommendation for a county-wide water system, each growing area will have to develop its own system for water supply and treatment as demands increase.

CLASSIFICATION OF CHATHAM COUNTY SURFACE WATER

The North Carolina Board of Water and Air Resources classifies the surface waters of North Carolina on the basis of the existing or contemplated "best usage" of the various waters in the river basins. The purpose of this classification system is to provide for the conservation of water resources through a coordinated program of pollution abatement and control that will protect human health, prevent injury to plant and animal life, prevent damage to public and private property and ensure the continued enjoyment of the natural attractions of the state. The classification that is given to a stream is based upon what was the best use or what was expected to become the best use of the stream at the time of classification. The stream classification does not indicate what the specific quality of a stream is. The classification does specify minimum standards that must be observed in releasing any waste waters into a particular stream. Below is a description of the stream classification categories, describing the "best usage" for which the waters in each class must be protected:

Fresh Waters

Class A-I - Suitable as source of water supply for drinking, culinary, or food processing purposes after treatment by approved disinfection only, and any other usage requiring waters of lower quality.

Class A-II - Suitable as a source of water supply for drinking, culinary or food processing purposes after approved treatment equal to coagulation, sedimentation, filtration, and disinfection, with additional treatment if necessary to remove naturally present impurities, and any other usage requiring waters of lower quality.

Class B - Suitable for outdoor bathing and any other usage except as source of water supply for drinking, culinary or food processing purposes.

Class C - Suitable for fishing and fish and wildlife propagation, and any other usage requiring waters of lower quality.

Class D - Suitable for agriculture and for industrial cooling and process water after treatment by

the user as may be required under each particular circumstance.

The classification of all rivers, creeks, and their tributaries in Chatham County is illustrated in Map #17 on page 77 The minimum quality of waste water that may be released into any of these streams is determined by this best usage classification. The quality of any stream must not be brought below that specified in its given classification by the addition of any waste water.

Just as the use of land changes over time, so does the use of water in rivers and streams. Many streams in Chatham County are presently classified "C" or "D" because at the time of classification, fish, wildlife and agriculture were viewed as the best usages to be made of the streams in the foreseeable future. Suburban development has now caused some of these streams to be used for receivers of waste treatment plant effluent. Others are receiving the wastes of newly located industries. Reclassification of streams will be necessary to preserve them for additional sources of drinking water and for swimming and other water sports. Intended usage of the New Hope Reservoir will require a reclassification of the New Hope River from "C" to a dual classification of A-II/B for it to be suitable for water supply and recreation. The need for other stream reclassification will be studied in the future Development Plan of Chatham County.

WATER POLLUTION

Although surface water is very plentiful in Chatham County, much of the surface water is polluted and not fit for human consumption without treatment. Major contributors of waste to surface waters are municipal and private sewage collection and waste treatment systems, textile plants, poultry processing plants, chemical plants, paper mills, meat processing plants, milk processing plants and breweries. Present state law requires any person disposing of wastes into any watershed classified by the state to apply for and obtain a permit to do so. The law also

requires that as a precondition to the discharge of waste, secondary treatment or equally effective treatment and control is the minimum acceptable abatement action for all significant sources of waste, regardless of the assigned stream classification or water quality of the receiving stream. Further treatment of waste discharges are required to the extent that the discharge of treated waste must not reduce the water quality in the receiving stream below the minimum standards established for the stream classification. Persons, corporations or towns holding permits allowing the discharge of treated waste into streams must apply for a new permit when making any additions in quantity of discharge or any changes to their method of treatment or treatment facilities.

The present system of stream classification and pollution abatement requirements, regulated by the North Carolina Department of Water and Air Resources, will protect the water supplies of Chatham County if continued enforcement is maintained and if streams are reclassified for better uses as the needs occur. There are presently five areas in Chatham County where streams are classified for protection of drinking water supplies:

1. Deep River, from the mouth of Big Governor's Creek to Secondary Road No. 1007 at the Bridge Crossing at Gulf; Smith's Creek, from its sources to the Deep River; Indian Creek, from its source to the Deep River; and Little Indian Creek, from its source to Indian Creek (for Goldston-Gulf Sanitary District Water Supply).
2. Rocky River, from the Randolph-Chatham County Line to the Siler City reservoir dam; North Fork Rocky River from Alamance-Chatham County Line to the Rocky River; Green Briar Creek, from its source to the Rocky River; Lacy Creek, from its source to the Rocky River (for Siler City Water Supply).
3. Haw River, from Dry Creek near Bynum to water supply intake for O'Dell Manufacturing Company at Bynum; Wilkinson Creek, from its source to the Haw River (for Pittsboro Water Supply).

4. Robeson Creek, from its source to the Pittsboro water supply; Hill Creek, from its source to Robeson Creek (for the Pittsboro Water Supply).
5. Cape Fear River, from the junction of the Haw and Deep Rivers to U. S. Highway 301 Bridge at Fayetteville (for Lillington and Fayetteville Water Supply).

There are several locations upstream from these water supplies on the Haw, Deep and Rocky Rivers where treated wastes are being discharged into these streams. Present stream flows dilute the treated waste sufficiently to maintain the quality needed for water supply in Chatham County. If these cities and industries add significantly to the amount of their waste discharge, they will be required to provide a higher level of treatment to maintain the desired water quality in Chatham County.

Many citizens in Chatham County and the surrounding counties are deeply worried about the possibility of heavy pollution of the New Hope Reservoir. Water quality in the reservoir will not only be affected by development in Chatham County, but also by development outside the county on the upper reaches of the New Hope and the Haw Rivers. The reservoir will be filled by the waters of these rivers. If the stream classification of A-II of the Haw River at Bynum is not violated by upstream sources of waste, the only additional pollution of the Haw River will come from within Chatham County. Present waste discharges into the Haw River watershed below Bynum and above the reservoir dam site come from the City of Pittsboro Waste Treatment Plant and the Webster Poultry Company on Robeson Creek. The City of Pittsboro is presently working towards improving their sewage treatment plant, the effluent of which was violating the stream classification of Robeson Creek as recently as August, 1969.

The New Hope River receives major waste treatment plant discharges from the Cities of Carrboro, Chapel Hill and Durham, and from Parkwood Subdivision and the Research Triangle in Durham County. The Carrboro Waste Treatment Plant on Morgan Creek is presently violating the stream classification. This condition

will cease when Carrboro closes this plant and has its waste treated at Chapel Hill's Morgan Creek Plant. The City of Durham has four waste treatment plants in the New Hope River Basin, two of which violate the stream classification from time to time.

Long range plans for waste disposal in the Research Triangle Region, presented in the Research Triangle Region Development Guide by the Research Triangle Regional Planning Commission, propose the construction of two new waste treatment plants in the New Hope River drainage area. One of these would be located on New Hope Creek to take over the waste disposal for Durham's present four plants in this area. The other would be located on Northeast Creek west of Research Triangle Park to expand and improve the present Durham County plant at that location and take over the waste disposal of Parkwood. Each plant will have an eventual capacity of 30 million gallons a day, but is expected to provide advanced waste treatment that will result in a purer effluent than Durham is presently releasing.

Aside from these major sources of treated waste effluent, there are also several smaller waste treatment plants operated in the Durham area by nursing homes, mobile home parks and small subdivisions. These plants have been quite capable of handling the waste loads imposed on them but through misoperation have frequently failed in their function, allowing highly polluted effluent to be discharged into the streams. As Durham and the Research Triangle Region expand, these operations will be eventually connected to the regional sewage treatment plants. Better operation is expected in the near future as well, since new State laws require that all waste treatment plants be operated by trained personnel licensed by the State.

There is a definite need for continued observation and evaluation of the effects of development on water quality in the New Hope Reservoir. The authority in North Carolina for this is held by the State Department of Water and Air Resources. The Federal agency concerned is the Federal Water Pollution Control Administration in the Department of the Interior. The County

Board of Commissioners will have to work with these agencies in protecting the water quality in the streams of Chatham County and the New Hope Reservoir.

Sources: Chatham County Soil Survey, U. S. Department of Agriculture, Soil Conservation Survey, 1968.

Classification and Water Quality Standards Applicable to the Surface Waters of North Carolina, N. C. Board of Water and Air Resources, Raleigh, North Carolina, January 1968.

Geology and Ground Water in the Durham Area, North Carolina, Ground Water Bulletin Number 7, North Carolina Department of Water Resources, May 1966.

Research Triangle Region Development Guide, Research Triangle Regional Planning Commission, Research Triangle, North Carolina, April 1969.

Water and Sewer Planning Report for Chatham County, L. E. Wooten and Company, Raleigh, North Carolina, 1968.

MINERAL RESOURCES OF CHATHAM COUNTY

The mineral resources of Chatham County include clay, crushed stone, pyrophyllite, copper, iron, gold and coal. At present the only mineral resources in production are clay and crushed stone. The clay, in abundant supply, is used in the manufacture of brick and vitrified sewer pipe. The crushed stone is used as road metal and as aggregate in the construction industry. In 1967 Chatham County produced 308,486 short tons of clay valued at 210,000 dollars. The Siler City crushed stone quarry operated by Superior Stone Company came on stream in 1967 and production and sales figures are confidential.

Currently, four companies are manufacturing heavy clay products from Triassic clays and shales of the Newark Group in southern Chatham County. Pomona Pipe Products Company manufactures pipe with clay and shale from the Pekin Formation of the Newark Group. Its mine and plant are located on the north side of Highway U. S. 421 just west of Gulf and 1.3 miles west of the Secondary Road 1007 intersection.

Boren Clay Products Company also mines clay and share from the Pekin Formation at the western edge of Gulf and just east of Pomona's Gulf mine. Material from Boren's Gulf mine is shipped by railroad approximately forty miles northwest to Pleasant Garden, North Carolina, where it is blended with residual clay from a local granitic rock to produce brick. The Chatham Brick and Tile Company Division of Sanford Brick Corporation manufactures brick at its mine and plant on the eastern edge of Gulf at the north end of Secondary Road 2146, 0.7 mile north of Highway U. S. 421. Here clay and shale from the Sanford Formation of the Newark Group is mined.

At Brickhaven, in the southeastern tip of Chatham County, Cherokee Brick Company mines clay and shale from the Cumnock Formation of the Newark Group for the production of brick. The Cherokee mine is located 1.5 miles north of Brickhaven while their plant is situated at the western edge of community on

Secondary Road 1923. Laboratory tests on clay and shale samples from the four producers as well as eight selected samples from other parts of the Triassic basin along the southern and eastern margins of Chatham County indicate potential values which include use as the sole component or a major constituent in brick, tile, drain tile, sewer pipe and pottery.

Volcanic Slate Belt rocks underlie approximately two thirds of Chatham County and are located primarily in the central and western portions. Four samples of residual clays were selected with two coming from the mafic volcanics and two from the felsic volcanics. Sampling was conducted 2.3 miles east of Pittsboro, 4 miles west of Carbonton, 7 miles east of Siler City and 4 miles northwest of Siler City. Testing indicates potential values for these clays as major constituents or sole components of face brick, tile, sewer pipe, structural clay products, decorative brick and possible use in the domestic earthenware industry.

Good quality bituminous coal and minor natural coke occur in the Deep River Triassic Basin, an area about 5 to 10 miles wide and 35 miles long. The last production was at the Carolina mine where in 1949, 14,000 short tons of bituminous coal valued at 104,000 dollars were produced.

Coal mining was discontinued entirely in Chatham County in the early 1950's. Mining operations were largely unsuccessful because of lack of capital, insufficient knowledge of the location of the coal, costly mistakes, and mining disasters. However, according to the Geology of the Deep River Coal Field report by the U. S. Department of Interior (1949) there still is coal mining potential in the area between the Gulf and Deep River Faults (includes the major Black Diamond, Deep River, Gulf, and Carolina mines in Chatham County) although the heavily faulted area presents mining complications. Under present market conditions the coal in Chatham County is not economic nor will it be in the foreseeable future because of the great abundance of readily accessible coal in other parts of the United States.

At present there is only one known pyrophyllite deposite in Chatham County. This prospect is located in the northwestern corner of the county on the Don Hinshaw farm. Stuckey (1967) locates the property as follows: "This property is about 2 miles east of State Road 1004 and a short distance north of State Road 1343. It can be reached by leaving State Road 1004 at State Road 1343 about 2.5 miles south of the Chatham-Alamance line. Follow State Road 1343 about 1.5 miles northeast to the Hinshaw farm." This property has been prospected and there are indications of a potential ore deposit.

There are three known copper mines in Chatham County; the Sloan mine, the Bear Creek mine and the Millright or Phillips mine.

The Sloan mine is located 450 feet south of State Road 1958; 0.45 miles east of the intersection of State Road 1958 and State Road 1957. This mine appears to have been pre-Civil War and to have had considerable production. However, there are not known recorded production figures for this mine.

The Bear Creek mine is 3 miles southwest of Harpers Cross Road and produced 7 tons of ore in 1944. The Phillips mine is 2.5 miles southeast of Harpers Cross Road and produced 260 tons of ore during 1942 and 1943.

Other metal and copper prospects in the county are the Gilmore-Hart copper prospect, the Graham prospect, the Cassana Kidd prospect, the W. H. Purvis prospect and the Barringer-Phillips copper prospect.

Iron ore was mined in Chatham County at the Ore Hill iron mine from the American Revolution through 1903 when operations ceased because the Greensboro iron furnace shut down. The iron mine is located 5 miles southwest of Mt. Vernon Springs on Ore Hill, 15 miles northwest from the center of Bonlee. An unknown quantity of ore remains in the ground but, with lack of a market, it is not likely to become economic.

Gold is found in many of the stream gravels throughout Chatham County. It is found in the basal conglomerate of the

Triassic and in more recent gravels perched on the Triassic rocks. This gold has been derived from auriferous veins and rocks in the "Slate Belt" and could indicate economic gold deposits not yet discovered.

Sources: Nitze, Henry B. C., Iron Ores of North Carolina, Bulletin No. 1, North Carolina Geological Survey, 1893.

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FORESTRY

Chatham County is blessed with an abundance of wooded areas. The North Carolina Division of Forestry statistics show that 343,600 acres of the county's 452,480 total acres are in commercial forest land. This means that 76 percent of the total land area in Chatham County is classified as forestry land.

Several major paper companies own sizeable tracts of land in Chatham County. These are:

TABLE 8

MAJOR HOLDERS OF COMMERCIAL FOREST LAND IN CHATHAM COUNTY

Corporation	Acres
Albemarle Paper Company	3,436
Continental Can Company	5,534
Halifax Paper Company	17
International Paper Company	4,689
Piedmont Woodyards	763
Reigel Paper Company	745
Travelers Insurance (Hiwassee Land Company)	705
U. S. Steel and Carnegie Pension Fund (Division of Reigel)	2,283
Weyerhaeuser	879
Total	19,049

The total paper company holdings in Chatham County is 19,049 acres. This figure represents only about 5¼ percent of the entire forested land in the county. Much of the forested land is in individual ownership located on small lots adjacent to farmland and pastures.

In Chatham County in 1964 it was estimated by the North Carolina Division of Forestry that 740 million board feet of sawtimber was standing on the land. Sawtimber is primarily used in the wood construction and furniture industry. In 1964 Chatham County cut 29,000,000 board feet of softwood sawtimber and 5,000,000 board feed of hardwood sawtimber. The North Carolina Division of Forestry estimates one thousand board feet of softwood is worth $30 to the landower and about $40 to the sawmills and

secondary producers in Chatham County. One thousand board feet of hardwoods is worth $15 to the landowner and $40 to the mills. Chatham County derives its economic value from forestry in terms of the board feet of timber sold and sawmill operations. An estimate of dollar value of sawtimber derived by all the citizens of Chatham County and secondary producers in 1964 was $1,100,000.

TABLE 9

TIMBER IN CHATHAM COUNTY, 1964

Species	Sawtimber (Million Board Feet)	Growing Stock (Thousand Cords)
Yellow Pine	291.0	1,796
Other Softwoods	10.3	50
Soft Hardwoods	178.3	1,010
Hard Hardwoods	260.1	1,420
	739.7	4,276

Source: Herbert A. Knight and Joe P. McClure, North Carolina's Timber, Southeast Forest Experiment Station, U. S. Department of Agriculture, 1966, p. 44.

Pulpwood production in Chatham County was 58,639 cords (30,401 from pines and 28,238 from hardwoods) in 1966. A cord is 128 cubic feet of wood. Trees used for pulpwood are approximately fifteen to twenty-five years old and 5" to 10" in diameter at a man's breast height (4½ feet above the ground). One cord of pine (softwood) is worth about $6 to the landowner and $11 to the cutter and pulp mill operators. One cord of hardwood is worth about $1 to the landowner and $11 to the cutter and primary producer (sawmill). Income generated in Chatham County from pulpwood production was about $850,000 in 1966.

Forestry is approximately a $2 million industry for Chatham County. In addition to the economic potential of the woodlands in Chatham County the trees provide many other benefits. Among these are: reduction of flood hazards, modification of strong winds, reduction of soil erosion, provider of habitat for wildlife, and of course their natural beauty.

Since a great deal of the forested land in Chatham County lies in small tracts the owners must be educated to follow sound management practices and should be aware of the advantages of this long term investment. The County Forest Ranger is assigned to Chatham to work with woodland owners in the county to advise them in the techniques of planting, thinning, cutting, and sound forest management practices.

From a standpoint of economics, conservation and aesthetics the forest lands in Chatham County provide a valuable natural resource deserving of the most beneficial management techniques. Recommendations will be made in the future Development Plan of Chatham County for preserving this asset.

Sources: Chatham County Tax Records, Chatham County, North Carolina, 1967.

Forestry Survey Statistics for the Piedmont Region of North Carolina, 1964, Division of Forest Economics Research, U. S. Department of Agriculture.

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MAN-MADE FEATURES

GENERALIZED LAND USE

INTRODUCTION

The land area of Chatham County is fixed, but the number of people using the land is not fixed. As the number of people in Chatham County increases, rational decisions must be made to insure the proper use of this limited resource. This section of the Land Potential Study will describe the existing land use patterns, land use problems, housing conditions and land use trends in Chatham County.

SUMMARY OF LAND USE

Chatham County is 452,480 acres in size (707 square miles). The major land uses are as follows:

TABLE 10

1966 LAND USE IN CHATHAM COUNTY

Land Use	Land Use in Acres	Percent of County
Cropland	54,010	11.9
Pasture	29,813	6.6
Forestland	343,600	75.9
Urban	13,553	3.0
Other Land Areas	9,916	2.2
Water Areas	1,588	.4
Total	452,480	100.0

Source: U. S. Department of Agriculture, Soil Conservation Service, Conservation Needs Inventory.

Map #19, on the following page, shows the distribution of the present land uses found in Chatham County. This generalized map is the product of field surveys taken by the North Carolina Division of Community Planning (1968). The existing land uses in Chatham County have been analyzed by townships and a separate discussion of each township follows.

Albright Township

Albright Township is located in the extreme northwestern portion of the county. The following transportation routes pass through Albright Township: the Southern Railway, Highway 421, and many rural paved secondary roads. There are no incorporated towns in Albright Township and the only community of any substantial size is Silk Hope.

Approximately 70 percent of the 33,938 acres in Albright Township is used primarily for agriculture and is in small farm plots. The remaining 30 percent is wooded area.

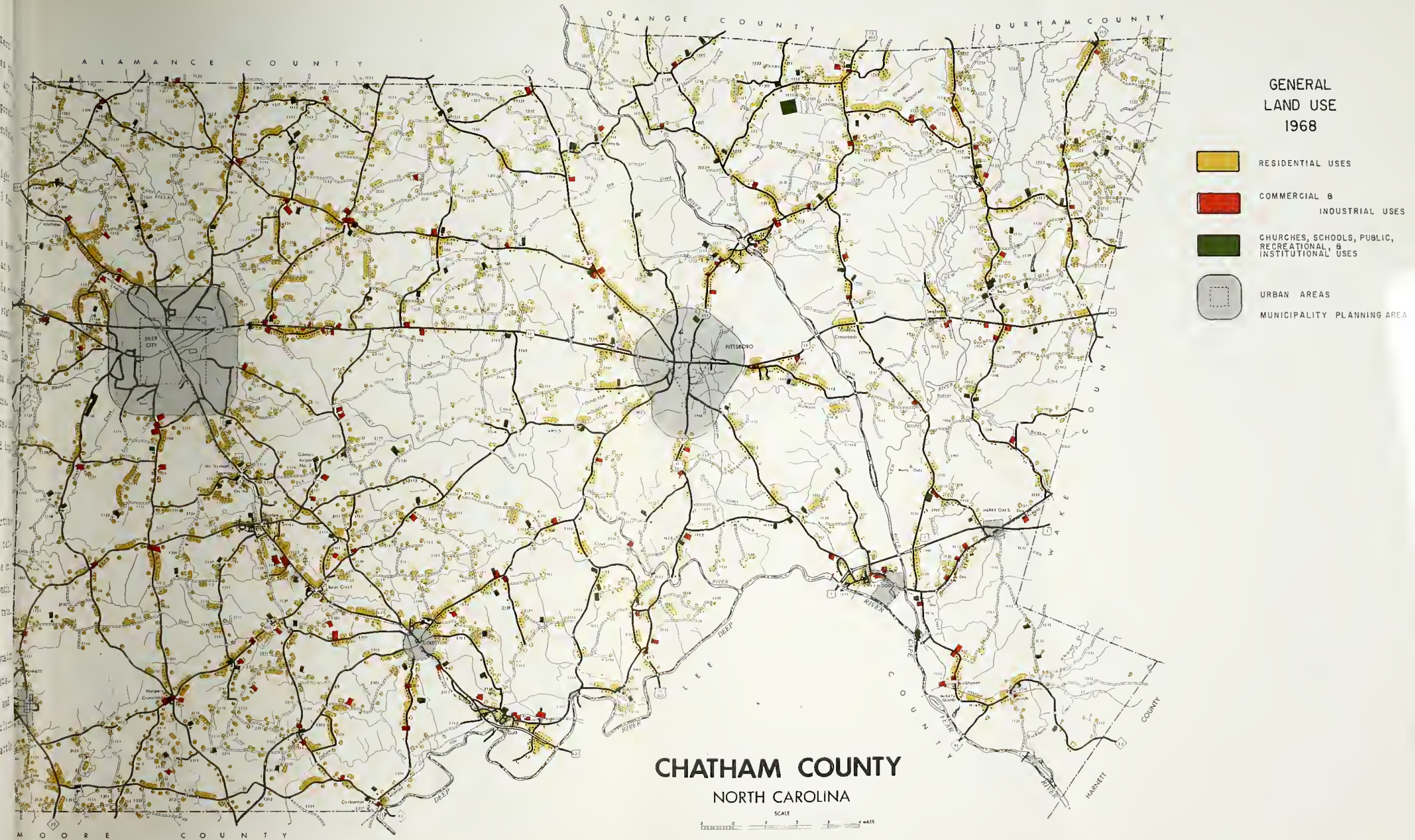
Residential development is widely dispersed along the secondary paved roads. Close to twenty small rural churches can be found in Albright Township. The main shopping area for the residents of Albright is the nearby city of Siler City. Gas stations and small country grocery stores can be found near the junctions of Secondary Roads 1346-1004 and 1346-1003 (Silk Hope). The greatest concentrations of people are along Roads 1346 and 1003.

Albright's economic wealth is derived from agriculture. This includes general agricultural crops (wheat, hay, oats, and barley); some corn and clover; beef and dairy cattle; and hogs and chickens.

Baldwin Township

Baldwin Township is located in the north-central portion of Chatham County. Baldwin is served by Highway 15-501, no railroad, and several rural secondary paved roads. There are no incorporated towns in Baldwin Township and the only substantial settlement is Bynum (estimated population 150), an industrial community (Odell Manufacturing Company - textile).

About 75 percent of the 28,374 acres in Baldwin Township is in woodland and the remaining 25 percent of land is in small farms. Most of the farms are concentrated around Bynum and Terrell, Collins and Pokeberry Creeks. Baldwin's agricultural produce consists of general crops, some hogs and beef cattle, a little dairying, and primarily tobacco.



GENERAL
LAND USE
1968

RESIDENTIAL USES

COMMERCIAL & INDUSTRIAL USES

CHURCHES, SCHOOLS, PUBLIC, RECREATIONAL, & INSTITUTIONAL USES

URBAN AREAS

MUNICIPALITY PLANNING AREA

CHATHAM COUNTY

NORTH CAROLINA

SCALE

Residential development is concentrated along U. S. Route 15-501, and along Secondary Roads 1525 and 1700. A great deal of building has taken place in Baldwin Township recently. Expensive new subdivisions have been developed, marginal housing such as Cedar Village has been built, and trailer courts and a golf club have also been constructed. The development is due to the proximity of Baldwin Township to the Town of Chapel Hill. Persons have moved here from Chapel Hill because they can buy land at lower prices and have a better tax situation than in Orange County and Chapel Hill.

Bear Creek Township

Bear Creek Township is located in the southwest corner of Chatham County. Bear Creek Township is served by N. C. Highways 902 and 42-22, and several important rural paved secondary roads including 1006 to Siler City. The Southern Railway passes through Bear Creek Township at Bonlee. Bennett and Bonlee are the largest communities in Bear Creek. Harpers Crossroads is another small settlement.

Bennett, Bonlee, Harpers Crossroads and Carbonton are shopping areas for the people living in Bear Creek Township. About 35 percent of the 51,338 acres in this large township are in agricultural land and the remaining 65 percent in woodland. Soils are generally poor for agriculture and intense residential development.

Bear Creek is one of the major chicken farming townships in Chatham County. Also, beef cattle and swine are raised. Bonlee has several small businesses related to grain and lumber industries.

Cape Fear Township

Cape Fear Township is located in the southeast corner of Chatham County. The main transportation arteries are the Seaboard Coast Line and Norfolk Southern Railroads, U. S. Highway 1, N. C. Highway 42 and Secondary Roads 1011 and 1700. The major settlements at Brickhaven, Corinth and Merry Oaks are unincorporated.

The entire township is very sparsely populated (1960 population - 77). Its total area is 34,788 acres.

Approximately 90 percent of the land in Cape Fear Township is woodland with 10 percent in small farms. Due to the sparse population few paved roads extend into Cape Fear Township. Carolina Power and Light Company has a major power plant along the Haw River in Cape Fear Township and several small industries (brick, lumber, and plywood companies) can be found along the railroad routes. Three new firms have announced plans in the past year to build chemical and particle board plants in this area, focusing attention on the area as a potential new growth center.

Residential development is scattered along Routes 1700 and Old U. S. 1 (Route 1011). The Cape Fear residents are equidistance from Pittsboro and Sanford (Lee County), and work and shop in both areas.

The principal economic product in Cape Fear Township is lumber with 16 percent of the total land being owned by a few private paper companies. Some tobacco and a little corn and beef cattle are also raised in Cape Fear Township.

Center Township

As its name implies Center Township is located in the geographical center of Chatham County. Total land area of the township is 42,473 acres. Center Township and its major city (Pittsboro) are served by the Seaboard Coast Line Railroad, U. S. Highways 64 and 15-501, N. C. Highways 87 and 902, and several paved secondary roads leading from Pittsboro to the surrounding counties.

The breakdown of land use for Center Township is approximately 60 percent woodland, 36 percent farmland and 4 percent of the land is in urban use.

Pittsboro (population 1,225 - 1960) is the county seat for Chatham County and therefore is a governmental as well as economic center for the eastern portion of the county. The County Courthouse is in Pittsboro and so are the County Education,

Agriculture, and Welfare Offices plus some Federal agencies.

There are hosiery, textile and poultry mills located in and around Pittsboro, as well as hatcheries and wood and lumber yards. Pittsboro is also the shopping and banking center for central Chatham County.

Center Township derives its income from lumber, dairying, broilers, and poultry processing plants, some swine, and general crops grown mostly for animal feed.

Gulf Township

Gulf Township lies in the south-central portion of the county with the southern border being the Deep River. The township is served by the Norfolk Southern and the Southern Railway. Other important transportation routes include U. S. Highway 421, Highway 902 and 42, and Secondary Roads 1010 and 2306 plus other paved secondary routes.

Approximately 55 percent of the 46,486 acres are used for farming purposes and the remaining 45 percent is in woodland.

The only incorporated town in Gulf Township is Goldston (1960 population - 374). Goldston and Gulf are rural communities centering around the lumber, brick, and pipe industries. Goldston's main street (Highway 421) contains several gas stations, eating places, shopping and commercial areas and serves many of the needs of the southwestern population of Chatham County.

Agricultural products in Gulf Township include: dairying, small grain crops, swine, beef, cattle, tobacco and poultry.

Hadley Township

Hadley Township lies in the north-central portion of Chatham County. The principal transportation routes are N. C. Highway 87, and Secondary Roads 1346 and 1549. There are no railroads. There are not any incorporated towns in Hadley, but the residents are within 12 miles of Pittsboro or Siler City.

About 60 percent of the 29,047 acres in Hadley Township is used for agriculture and is in small farm plots. The remaining 40 percent is wooded area.

Small grocery stores and gas stations are located at numerous intersections. Ten small country churches are located in Hadley Township. Residential development is concentrated along Roads 1346, 1549, and Highway 87. The main farm products of Hadley are milk, tobacco, swine, beef cattle, poultry and general farming.

Haw River Township

Haw River Township is located in the southeastern portion of Chatham County and is bounded on the eastern border by the Haw River. Haywood and Moncure are the principal communities in Haw River Township. Neither are incorporated. Main transportation arteries include the Seaboard Coast Line Railroad, U. S. Highway 1, and Secondary Road 1012.

Approximately 85 percent of the township's 14,428 acres is forested and the other 15 percent is in agricultural use.

The population is located along road 1012 and in the areas of Haywood and Moncure. Haywood and Moncure are primarily rural communities providing labor to the Carolina Power and Light Plant, and the brick and lumber industries located nearby. People living in Haw River Township generally shop in Pittsboro or Sanford.

The economy of Haw River is dependent upon the Carolina Power and Light Company plant, Triangle Plywood and Cherokee Brick. The main agricultural product is timber and pulpwood from small plots of managed woodland.

Hickory Mountain Township

Hickory Mountain Township is located in the central portion of the county and lies between Pittsboro and Siler City, but does not contain any incorporated towns. The main transportation routes are U. S. Highway 64, N. C. Highway 902 and Secondary Roads 2163 and 2170. Railroads do not pass through Hickory Mountain Township.

It is estimated that 60 percent of the 40,898 acres in Hickory Mountain is in agricultural use and 40 percent of the remaining land in forestry uses. The population is concentrated along U. S. Highway 64 and State Road 2170. The residents of

Hickory Mountain Township depend upon Siler City and Pittsboro for their goods and services.

Hickory Mountain is a prosperous agricultural township, producing poultry, beef cattle, swine, and some dairy products.

Matthews Township

Matthews Township is located in the extreme west-central portion of the county and contains the economic heart of Chatham County--Siler City. Matthews Township is served by the Southern Railroad and U. S. Highways 64 and 421. Several paved secondary roads also connect Siler City with the surrounding townships.

Approximately 10 percent of the total 44,476 acres is in urban use, 50 percent in farmland and 40 percent in woodland.

Residential and commercial development in Matthews Township is centered around Siler City (population 4,455). The main industries located in Siler City are: food processing, shoes, furniture, lumber, apparel, hosiery and textiles. The principal agricultural enterprises engage in dairying, swine, poultry, and some general farming.

New Hope Township

New Hope Township is located in the extreme east-central portion of the county. New Hope Township contains no incorporated towns, but it does contain three crossroad communities: Bells, Griffins Crossroads and Seaforth. The Norfolk-Southern Railway passes through New Hope Township as do these important transportation routes: U. S. Highway 64, N. C. Highway 751, and Secondary Roads 1008 and 1700.

Approximately 80 percent of New Hope Township's 33,137 acres is in woodland and 20 percent is farmland. The principal agricultural product is tobacco while dairying, poultry and food crops are also maintained.

There are no major industries in New Hope Township and about 56 percent of the township will be acquired by the U. S. Government for the New Hope Reservoir. The land is being purchased as quickly as possible in the face of limited fund appropriations by Congress. Part of the land being acquired will be permanently

flooded by the reservoir conservation pool. The remainder will be used for flood storage and recreational purposes. That part of the land being reserved for flood storage will not be cleared of timber and will also be available for use for recreational or wildlife conservation purposes. Population has always been sparse in New Hope Township and several people have already relocated to other farms or homes in Chatham County.

Oakland Township

Oakland Township is located in the south-central portion of the county between Gulf and Haw River Townships. There are no incorporated towns in Oakland Township. Oakland is served by Highway U. S. 15-501/N. C. 87 and a few secondary roads. Most of the population is scattered along U. S. Highway 15-501.

Approximately 85 percent of Oakland Township is in woodland and the remaining 15 percent is in farms. Total land in Oakland Township is 17,086 acres.

The prime income source for Oakland residents is their well managed forested land.

Williams Township

Williams Township lies in the extreme northeastern corner of Chatham County. The only settlement in Williams Township is the unincorporated community of Farrington. The main transportation arteries include the Norfolk Southern Railway, U. S. Highway 15-501, N. C. Highway 751, and State Roads 1700 and 1008.

Of the 35,741 acres in Williams Township, about 50 percent are woodland and 50 percent farmland. Almost a dozen churches dot the countryside with the population concentrated along Highway 751 and State Roads 1008, 1700, and 1721. U. S. Highway 15-501 forms the western border of Williams Township. Roughly 43 percent of the township will be acquired for the New Hope Reservoir. As in New Hope Township much of this land will be permanently flooded by the reservoir conservation pool, but a large part will also be available for recreation use and wildlife conservation.

There has been some new development in Williams Township in recent years, mostly in single family homes and mobile home parks. Most of this development is generated by growth in Chapel Hill and Durham. People who work and shop in these cities have sought homes in Chatham County because of the lower taxes and greater availability of land and housing sites.

There is one lumber industry at Farrington and the major agriculture product is tobacco.

LAND USE PROBLEMS AND TRENDS

The land use problems that must be faced in Chatham County are typical in some respects to those in other North Carolina rural counties. In other respects, they are almost singular. Chatham County has scattered junkyards and garbage dumps that are neither attractive nor sanitary. Residential, industrial and commercial land uses are intermixed and uncontrolled as to their location, creating unstable land values and lowering the quality of the environment. Business districts are scattered along primary and secondary roads, increasing highway congestion and creating traffic hazards. Abandoned and dilapidated buildings exist which are unsightly as well as health and safety hazards. Soils which are poorly suited for drainage are overloaded with waste by high densities of septic tank development. Areas subject to flooding are provided for homesites by developers with low standards of public responsibility. These problems are common among rural and urbanized counties alike.

The more unique problems that Chatham County must face in the consideration of land use are directly related to those factors that are creating a demand for development. Chapel Hill, Durham and Raleigh are growing together as the Research Triangle Region. The overflow of this growth is creating pressure for development in northeast Chatham County. As the New Hope Reservoir comes closer to becoming a reality, developers and enterprising businessmen are looking to the associated opportunities for recreational, residential and commercial developments.

Industrial growth in Cape Fear Township will create additional demands for homes and businesses. Similar demands in the western part of the county are generated by Siler City's continued growth and new industrial and manufacturing developments. As each of these areas grow, Pittsboro, the county seat, will also have some modest growth due to its position as a governmental and geographic center.

The trend toward urbanization in Chatham County is very definite. The quantities of land being used for agricultural purposes are diminishing in favor of urban uses. The table below reflects the changes from 1958 to 1966.

TABLE 11

LAND USE TRENDS IN CHATHAM COUNTY, 1958-1966

Agricultural Land (acres)	1958	1966	% Change
Cropland	75,500	54,010	-28.5
Pasture	25,110	29,813	+18.7
Woodland	330,820	343,600	+3.9
Other	15,500	9,916	-36.0
Total Agricultural Land	446,930	437,339	-2.1
Non-Agricultural Land (acres)			
Federal Land	0	0	0
Water Areas (2.40 acres)	1,500	1,588	+5.9
Urban Areas	3,980	13,553	+240.5
Total Non-Agricultural Land	5,480	15,141	+176.3
Total Land Area	452,410	452,480	

Source: U. S. Department of Agriculture, Soil Conservation Service, Conservation Needs Inventory.

While the land uses in Chatham County are changing, the total number of farms and the average size of the farms is remaining fairly constant. In 1959 there were 1,731 farms in Chatham County and in 1964 there were 1,712 farms. In 1959 the

average size of a farm in the county was 125.0 acres and in 1964 the average size farm was 123.2 acres.

The change today in the county's land use picture is due to additional roads, business establishments, homes, and industries. Also land is being used to support cattle and swine production that was once used for cash crops. Agricultural land uses will continue to diminish as the New Hope Reservoir replaces farms and woodland, population increases, and industry continues to move into the county.

These problems are being faced by the county in their effort to plan ahead for future growth. Siler City and Pittsboro have established local planning boards to take an active role in guiding growth in and around those cities. The County Planning Board and Board of Commissioners have initiated a zoning ordinance to guide and control the quality of development in Baldwin and Williams Townships. Continued efforts by the planning boards and governing bodies can eliminate the existing land use problems and lead to better development of the environment.

Unsightly junkyards can be required to be screened from public view by fences and planting. Junkyards that are health hazards can be eliminated. Locations of new junkyards can be limited by development planning to areas away from desirable residential locations, attractive recreational areas and valuable business sites.

Indiscriminate garbage dumping can be similarly controlled to protect the health, welfare and safety of the county residents. Inappropriate dumps can be eliminated and alternate landfill sites designated for disposal of solid waste under the authorization and control of city and/or county government. Disposal sites can be coordinated with the county development plan to provide a common disposal site for each developing area where it will not be a nuisance or hazard. They may also be located so as to supplement county development by providing fill sites at areas where fill is critically needed in the path of expected development.

Advance zoning based on the county development plan can help to identify for developers lands that are most suitable for specific uses. Specific locations which are limited in supply can be reserved for their best use by adherance to the development plan. Each developer will have better knowledge of expected future conditions by referring to the development plan and may make his decisions accordingly. Land use conflicts can thus be prevented from occurring and existing use conflicts can be eliminated as they are superceded by more appropriate development. Businesses will be better able to cluster in appropriate locations for their mutual advantage in attracting customers. Coordination of land development with future plans for highway development will eliminate the chance of desired routes being preempted by high-cost development or the need for expensive demolition and relocation of homes and businesses.

Advance planning for highway locations through the county will also help to establish prioritites for rebuilding and paving of existing roads where needed in developing areas before development becomes so intensive as to make road improvement uneconomic. Other public improvements such as water supply facilities, waste treatment plants, recreation areas and public buildings and services can also be planned in advance of need. When future forecasts of needs are used as a guide in this manner, public money may be reserved for specific purposes to offset the need for expensive future borrowing. The provision of public facilities, especially water and sewer systems, in a specific area will attract new residential and commercial growth to that area. In this way growth may be induced, rather than forced, to occur in the desired areas as indicated in the development plan and substandard development may be prevented.

HOUSING

There are several varied types and many different degrees of quality of housing in Chatham County. Much of it is very new and very modern housing, but there is also a large amount which is deteriorating and dilapidated. Some families live in converted farm buildings or rural shacks without plumbing, heating, or other modern utilities and conveniences. It may be said that they do so by choice, but only because their choice is limited by their poverty-level income or the fact that better housing is not available to them. The physical condition of housing is an indication of the real availability of good housing to the residents. Tables 12, 13, 14, and 15 on the following pages present statistics from the 1960 census which indicate the quality of housing in Chatham County at that time. While this data is admittedly somewhat out of date, it represents conditions that have not been since attacked by any concentrated program, either public or private. Observations throughout the county confirm that these conditions still exist and that in some areas they have become worse.

The housing conditions indicated in the following tables are defined by the U. S. Census according to the following terms:

1. Sound Housing is that which has no defects, or only slight defects which normally are corrected during the course of regular maintenance. Examples of slight defects are: lack of paint, slight damage to porch or steps, and small cracks in walls.
2. Deteriorating Housing needs more repair than is provided in the course of regular maintenance. Such housing has one or more defects that must be corrected if the unit is to continue to provide safe and adequate shelter. Examples of defects are holes, open cracks, loose or missing material over a small area of wall, foundation, floor or roof or badly-damaged steps or porch.

3. Dilapidated Housing does not provide safe and adequate shelter; in its present condition it endangers the health, safety, or well-being of the occupants. Such housing represents inadequate original construction or has one or more critical defects; on a combination of minor defects so critical or wide-spread that the structure should be extensively repaired, rebuilt or torn down. Examples of defects are holes, open cracks, loose or missing materials over a large area of the foundation, walls, or roof, and extensive damage by storm, fire or flood; sagging roof or foundations. Such structures, in order to meet minimum standards, should require drastic restoration that would be economically unfeasible, and, therefore, they should be demolished.

The tables on the following pages help to illustrate the housing problem in Chatham County. Table 12 shows the amount of sound, deteriorating and dilapidated housing in each township in 1960. In Tables 13 and 14 the distribution of dwelling units (D.U.) and population has been categorized by white and nonwhite residents in order to give a better analysis of the existing housing situation. Table 15 shows the distribution of population by race for purposes of comparison with the housing distribution to reflect the differing densities of population per dwelling unit and population per square mile.

TABLE 12

CHATHAM COUNTY HOUSING CHARACTERISTICS BY TOWNSHIP, 1960

TOWNSHIP	Total No. In Twp.	% Of County Total	SOUND UNITS Number In Twp.	% Of Total In Twp.	% Of Total In County	DETERIORATING UNITS Number In Twp.	% Of Total In Twp.	% Of Total In County	DILAPIDATED UNITS Number In Twp.	% Of Total In Twp.	% Of Total In County
Albright	409	5.4	218	53.3	2.9	121	29.6	1.6	70	17.1	0.9
Baldwin	407	5.4	156	38.3	2.1	127	31.2	1.7	124	30.5	1.6
Bear Creek	764	10.1	465	60.9	6.2	259	33.9	3.4	40	5.2	0.5
Cape Fear	307	4.0	184	59.9	2.4	104	33.9	1.3	19	6.2	0.3
Center	947	12.5	597	63.0	7.9	213	22.5	2.8	137	14.5	1.8
Gulf	778	10.3	508	65.3	6.7	139	17.9	1.8	131	16.8	1.8
Hadley	263	3.5	162	61.6	2.1	89	33.8	1.2	12	4.6	0.2
Haw River	244	3.2	127	52.1	1.7	61	25.0	0.8	56	22.9	0.7
Hickory Mtn.	369	4.9	301	81.6	4.0	66	17.9	0.9	2	0.5	0.0
Matthews	2,165	28.6	1,609	74.4	21.2	432	19.9	5.7	124	5.7	1.7
New Hope	322	4.2	162	50.3	2.1	127	39.4	1.7	33	10.3	0.4
Oakland	164	2.2	104	63.4	1.4	27	16.5	0.4	33	20.1	0.4
Williams	433	5.7	163	37.6	2.1	173	40.0	2.3	97	22.4	1.3
County Total	7,572	100.0	4,756		62.8	1,938		25.6	878		11.6

Source: U. S. Census of Population and Housing, 1960.

TABLE 13

CHATHAM COUNTY HOUSING CHARACTERISTICS BY NUMBER OF DWELLING UNITS ACCORDING TO RACE, 1960

TOWNSHIPS	WHITE RESIDENT HOUSING				NON-WHITE RESIDENT HOUSING				Total Units In Twp.
	Total In Twp.	No. Sound	No. Deteriorating	No. Dilapidated	Total In Twp.	No. Sound	No. Deteriorating	No. Dilapidated	
Albright	345	199	104	42	19	19	17	28	409
Baldwin	321	137	109	75	86	19	18	49	407
Bear Creek	714	455	230	29	50	10	29	11	764
Cape Fear	237	157	69	11	70	27	35	8	307
Center	659	501	114	44	288	96	99	93	947
Gulf	575	416	85	74	203	92	54	57	778
Hadley	220	153	56	11	43	9	33	1	263
Haw River	160	108	34	18	84	19	27	38	244
Hickory Mtn.	267	232	34	1	102	69	32	1	369
Matthews	1,739	1,393	302	44	426	216	130	80	2,165
New Hope	252	149	89	14	70	13	38	19	322
Oakland	123	85	17	21	41	19	10	12	164
Williams	299	139	120	40	134	24	53	57	433
County Total	5,911	4,124	1,363	424	1,661	632	575	454	7,572

Source: U.S. Census of Population and Housing, 1960.

TABLE 14

CHATHAM COUNTY HOUSING CHARACTERISTICS BY PERCENT DISTRIBUTION ACCORDING TO RACE, 1960

TOWNSHIPS	WHITE RESIDENT HOUSING				NON-WHITE RESIDENT HOUSING				Total Units In Twp.
	Total In Twp.	No. Sound	No. Deterior-ating	No. Dilapi-dated	Total In Twp.	No. Sound	No. Deterior-ating	No. Dilapi-dated	
Albright	84.4	58	30	12	15.6	30	26	44	5.4
Baldwin	78.9	43	34	23	21.1	22	21	57	5.4
Bear Creek	93.4	64	32	4	6.6	20	58	22	10.1
Cape Fear	77.2	66	29	5	22.8	39	50	11	4.0
Center	69.6	76	17	7	30.4	33	34	32	12.5
Gulf	73.9	72	15	13	26.1	45	27	28	10.3
Hadley	83.6	70	25	5	16.4	21	77	2	3.5
Haw River	65.5	68	21	11	34.5	23	32	45	3.2
Hickory Mtn.	72.4	87	12	1	27.6	68	31	1	4.9
Matthews	80.3	80	17	3	19.7	51	31	18	28.6
Oakland	75.0	69	14	17	25.0	46	25	29	2.2
Williams	69.0	47	40	13	31.0	18	40	42	5.7
County Total	78.2	70	23	7	21.8	38	35	27	100.0

Source: U. S. Census of Population and Housing, 1960.

TABLE 15

CHATHAM COUNTY POPULATION DISTRIBUTION, 1960

TOWNSHIPS	WHITES No.	WHITES %	WHITES Pop./ D.U.	NON-WHITES No.	NON-WHITES %	NON-WHITES Pop./ D.U.	Total Population	% Of County Population	Land Area (Acres)	OVERALL DENSITY People/ Sq. Mi.	OVERALL DENSITY People/ D.U.
Albright	1,083	77	3.14	320	23	5.00	1,403	5.2	33,938	26.5	3.43
Baldwin	989	72	3.08	386	28	4.49	1,375	5.1	28,374	31.0	3.38
Bear Creek	2,369	90	3.32	271	10	5.42	2,640	9.9	51,338	32.9	3.46
Cape Fear	675	63	2.85	393	37	5.61	1,068	4.0	34,788	19.6	3.48
Center	1,976	59	3.00	1,352	41	4.69	3,328	12.4	42,743	50.1	3.51
Gulf	1,853	65	3.22	1,005	35	4.95	2,858	10.7	46,486	39.3	3.67
Hadley	679	76	3.09	216	24	5.02	895	3.3	29,047	19.7	3.40
Haw River	459	52	2.87	430	48	5.12	889	3.3	14,428	39.4	3.64
Hickory Mtn.	832	61	3.12	542	39	5.31	1,374	5.1	40,898	21.5	3.72
Matthews	5,535	72	3.18	2,183	28	5.12	7,718	28.8	44,746	111.1	3.56
New Hope	764	65	3.03	403	35	5.76	1,167	4.4	33,137	22.5	3.62
Oakland	367	66	2.98	193	34	4.71	560	2.1	17,086	21.0	3.41
Williams	790	52	2.64	720	48	5.37	1,510	5.6	35,741	27.0	3.46
County Total	18,371	68.6%	3.11	8,414	31.4%	5.07	26,785	100.0	452,480	37.9	3.54

Source: U. S. Census of Population and Housing, 1960.

It can be noted from the above tables that 37 percent of all housing units in Chatham County are in deteriorating or dilapidated condition. Thirty percent of the white dwelling units are in deteriorating or dilapidated condition. Sixty-two percent (62%) of the non-white dwelling units are in deteriorating or dilapidated condition. The non-whites comprise 31.4 percent of the total population in the county.

Pockets of extreme poverty exist in Baldwin, Haw River, New Hope and Williams Townships. These townships are among the least developed in the county and contain sparse population concentrations. Rural shacks without plumbing, heating, and other modern conveniences can be found along State Roads 1537, 1541, 1700, 1752, 1900, 1926 and 1955.

Hickory Mountain Township, located between Siler City and Pittsboro, has the largest percentage of sound housing in the county. Hickory Mountain is located near the dairying and poultry center of the county and contains Chatham's best soils.

In summary, Chatham County has a definite housing problem, especially among the black residents. Blight is evident on many of the unpaved roads. Dwelling units in the remote areas are overcrowded, lack adequate sanitary facilities and utility lines, and are unfit and unsafe for human habitation. Such conditions place unnecessary strains on the daily living habits of the occupants and subject them to high risks of injury and disease.

There are several programs that the county could undertake to eliminate blight in general and to assist and encourage the development of better housing. The present program to provide a land development plan for the county will help to prevent future development of conflicting land uses. The supporting subdivision regulations will specify standards to be met in future subdivision of land, including provisions for street layout and right-of-way width and other minimum criteria for subdivision design. These regulations will reduce the possibility of future blight that might occur due to disjointed land

development patterns and inadequate provisions for streets and other public facilities.

Additional steps that might be taken following the land development plan include enacting county-wide zoning regulations, building codes, fire codes, plumbing codes, electrical codes and housing and occupancy codes. Each of these regulatory elements helps to attain the desired objectives of development in the county which are stated in the land development plan. These codes not only require individuals and businesses to meet minimum requirements, but also protect their investment by requiring their neighbors to meet the same standards.

The county government can also assist in providing better housing for those who cannot afford decent private housing by establishing a public housing authority and supporting a program to develop public housing with federal assistance in the rural county.

WATER FACILITIES

The citizens of Chatham are aware of their future water needs for industrial and urban expansion. Recently the County Commissioners applied for a reservation of 10,000,000 gallons of water per day for the years 1980-1990 and 20,000,000 gallons of water per day for the years 1990-2000 from the New Hope Reservoir. This water reserve has been approved by the State Department of Water and Air Resources.

Chatham County is blessed with an abundance of both ground water and surface water. Many locally owned wells dot the countryside and the Deep, Haw, New Hope and Rocky Rivers with their tributaries flow across the county. These items were discussed earlier in the section on Water Resources. With the availability of water from the New Hope project the water supply situation in Chatham is excellent.

Although the raw water supply is adequate, the water treatment plants of Siler City and Pittsboro were not designed to provide for large industrial demands or dense population concentrations. Therefore, Siler City and Pittsboro are faced with the problem of expanding their water treatment facilities to meet the demands of Chatham's expanding population and industrial development.

Siler City's one treatment plant has a total design capacity to 4 million gallons per day, with a raw water supply yield of 2.5 million gallons per day. Storage and distribution is handled by one elevated storage tank within the city limits having a capacity of 100,000 gallons, three standpipes with 1,300,000 gallons storage capacity, and a distribution system which consists of 12, 10, 8 and 6 inch lines with 2 inch or smaller lines running parallel to the larger mains or serving perimeter development.

Recently revised figures by the Statistical Services Center of the North Carolina Budget Division shows a population projection

for Siler City in 1990 of 13,522. This is three times Siler City's 1960 census population and is based on growth trends for Chatham County and Siler City between 1960 and 1965. With the increase of residential water uses due to automatic household appliances, lawn watering and air conditioning coupled with the demands made by industry and the surrounding areas now served by the Siler City water treatment plant, the present plant capacity is inadequate to meet 1980 needs.

The expected use will also exceed Siler City's supply of raw water taken from the Rocky River. There is a critical need to construct additional elevated storage tanks so that a one-day reserve supply would exist. Presently only 750,000 gallons of water are held in stock. A minimum additional storage of 1,000,000 gallons should be provided within the next five years. By 1980, 1,000,000 more gallons of water should be stored.

Pittsboro has two water treatment plants. Plant Number 1 has a capacity of 500,000 gallons per day but due to impoundment and intake complications would be extremely difficult to expand. Plant Number 2 has a current capacity of 250,000 gallons per day and can later be increased to a capacity of 500,000 gallons per day. Elevated storage in Pittsboro consists of one 100,000 gallon tank and one 200,000 gallon tank. The water distribution system consists largely of 10 and 6 inch lines. The Water and Sewer Planning Report prepared by L. E. Wooten and Company has concluded that the present water treatment capacities of 750,000 gallons is totally inadequate to serve the future needs of the Pittsboro area.

Additional factors that come into focus when discussing the water needs of the Pittsboro area are: 1) the impact of the New Hope Reservoir and 2) the impact of the industrial development near Moncure and in Cape Fear Township, being promoted by Carolina Power and Light Company. The Statistical Services Center of the N. C. State Budget Division estimates the 1990 population around Pittsboro (10 mile radius) at 9,000. Pittsboro will need to expand its water treatment facilities immediately

if it is to keep pace with the projected residential and industrial growth in the Pittsboro area.

The Goldston Gulf Sanitary District has a new water treatment plant with a capacity of 500,000 gallons per day. Existing distribution is primarily through 10, 8 and 6 inch lines with 2 inch service lines to individual users at the limits of the system. Raw water storage is provided by a 500,000 gallon impoundment adjacent to the treatment plant. Elevated storage for treated water is provided by a 500,000 gallon standpipe at Goldston. Although present demand is about 250,000 gallons per day, plans are being made to extent the system to the communities of Bear Creek, Bonlee, and Sandy Branch Community. Proposals have also been made to extend the system to Bennett. Future needs for added treatment and storage facilities will primarily depend upon how far the present sanitary district is extended.

SEWERAGE FACILITIES

Siler City and Pittsboro have municipal sewerage systems with waste treatment plants. The Town of Goldston has had engineering plans prepared for a sewerage system but construction has not yet taken place.

In the future it appears as if rural county population will remain scattered or on independent farms that can be adequately served with individual septic tanks. The industries that are beginning development in Cape Fear Township will be required to provide their own waste disposal facilities in the absence of a municipal system in that area. Although there will be many jobs available at these new industries, the lack of public water and waste treatment systems will work against the probability of any intensive residential development in the area in the near future. If the local residents and businessmen organized to develop a sanitary district to provide public utilities, there will be a much stronger base for the attraction of additional development. In several areas, subdivisions may be expected to appear which

will be beyond the service area of municipal facilities. County Subdivision Regulations should have adequate requirements to prevent health and safety hazards from being development in the form of excessive concentration of septic tank drainage fields. County zoning ordinances could also be effective in limiting the density of development in areas that are not served by waste treatment facilities.

The urban areas of Siler City and Pittsboro will continue to grow and will require expanded sewerage systems and waste treatment facilities to provide for this growth.

Past population figures and trends for Goldston and Gulf Townships indicate that a decline in population may occur here in the future. The initiative of the people in Goldston and Gulf to plan for a sewerage system and waste disposal facilities indicates that their desire for a clean and healthy city overshadows the indications of possible population decline. The provision of these facilities, coupled with the recent provision of a municipal water system, will undoubtedly reverse these past declines and help Goldston to become a new growth center in the county.

SUMMARY

While this evaluation of the individual water and sewerage systems in Chatham is only an overview, a detailed and comprehensive evaluation is presented by L. E. Wooten and Company in their study, Water and Sewer Planning Report for Chatham County, North Carolina, published in the spring of 1968. The conclusion of this report is that in consideration of the existing facilities and the expected future demand, the best solution will be to develop a County Water Filtration Plant that will take advantage of the New Hope Reservoir as a water supply source. In addition, a county water main loop should be constructed to eventually provide pure water to all communities of the county as well as rural residents. It is also concluded that it would not be feasible to construct this county plant and distribution

system until all three existing water systems within the county require additional raw water facilities.

The Siler City Community Facilities Study, presently in preparation, indicates that present peak water demands have the Siler City system working at 90 percent of its 2.5 million gallon per day capacity. Present peak demands in Pittsboro are already taxing the limits of the storage and treatment facilities. The Goldston-Gulf Sanitary District will soon be working near full capacity if its expansion plans are carried out. Proposals are also being made to provide a water system to the Taylor's Chapel Community. Besides these specific areas, there are many other clusters of rural residents who do not have dependable water supply systems. The demand for water supply throughout the county is growing much faster than was projected by the Water and Sewer Planning Report. If the recommended County Water System is to be implemented, the decision should be made as soon as possible. The delay in construction of the New Hope Reservoir should not delay the decision concerning a County Water System. The Reservoir is already authorized and will be built. The county has already reserved the right to part of the water supply. Towns and communities must continue to operate their water systems in the meanwhile and expand them if necessary. Their plans for expansion will be affected by whether or not there will be a County Water System. The commitment of the county to a County Water System at an early date will allow communities to build their facilities to take advantage of the future improvements and avoid costly duplication of raw water storage and treatment facilities.

There is also a need for improved waste treatment facilities for the growing urban areas. It would be possible to develop a countywide, gravity-flow sewerage and waste treatment system since over 80 percent of the county is drained by the Cape Fear River through the Deep, Rocky, Haw and New Hope Rivers, yet because of the sparse densities throughout most of the county, it would not be economically justifiable. The towns and

newly developing urban areas must plan to operate and expand their own sewerage and waste treatment systems as necessary. If industries with substantial liquid and solid wastes begin to locate in municipal sewerage areas the existing sewerage systems cannot handle the increased loads. Siler City and Pittsboro will need to expand their existing sewerage facilities before 1975 to accommodate the projected residential and industrial growth. Industries now locating in the Pittsboro area with large amounts of sewerage discharge should build lagoons or package treatment plants for preliminary settling and treatment prior to discharge of waste into the municipal system. New treatment plants will be necessary to take care of any new residential areas, other than rural or very low density development, which cannot connect to a municipal treatment system.

Sources: Water and Sewer Planning Report for Chatham County, L. E. Wooten and Company, Raleigh, North Carolina, 1968.

Alley, Williams, Carmen, & King, Consultants, Burlington, North Carolina.

TRANSPORTATION

Chatham County is fortunate in having a good transportation network. Rail facilities and U. S. highways are available to all the major population centers within the county. As a rural county begins to urbanize a prime factor in its development potential is the ability of goods and services to move quickly to and from market centers. Transportation also plays a key role in industrial site location. Most plants require a fast and wide distribution of their products - and these marketing capabilities are based on a strong transportation system. The various forms of transportation are examined individually in the following sections.

HIGHWAY

Chatham County has several major highways crossing through its boundaries. U. S. Highway 64 is the main east-west route linking the two largest population centers of Chatham County: Pittsboro and Siler City. Highway 64 is a cross-state connecting route for the cities of Nags Head, Rocky Mount, Raleigh, Pittsboro, Siler City, Asheboro, Lexington and Statesville. Eventually it is hoped by the County Commissioners that Highway 64 will be a four-lane route from Nags Head to Statesville. With Interstate 40 already existing from Asheville to Statesville, its link with an improved U. S. 64 would provide a modern expressway between the mountains and the coast across the central portion of the state. This would also improve access to the New Hope Reservoir.

The State Highway Commission, Department of Planning and Research, shows the annual average daily traffic count along U. S. 64 in Chatham County ranging from 2600 to 5000 vehicles per 24 hour day. U. S. Highway 64 provides a more direct link between Charlotte and Raleigh than Interstate 85 and thus is a heavily traveled truck route.

U. S. Highway 15-501 is the connecting north-south route for the residents of Pittsboro between Sanford (to the south) and the Chapel Hill-Durham area (to the north). The average daily traffic count on U. S. 15-501 in Chatham County is 1,940 to 5,350 vehicles per day. Many of Pittsboro's residents use 15-501 as a commuter highway to shop and work in either Chapel Hill or Sanford. Trucks use U. S. 15-501 as a link between the Chapel Hill-Durham area and Sanford, and then can travel on N. C. Highway 87 to Fayetteville.

U. S. Highway 421 links the following places: Greensboro, Liberty, Siler City, Sanford, Lillington, and Wilmington. The average daily traffic count on 421 in Chatham County is 2,900-4,400. U. S. Highway 421 is heavily traveled as a truck route serving to connect Sanford with the Piedmont Crescent city of Greensboro.

Other major highways linking Chatham County with the more populated areas of the state are: U. S. 1 to Raleigh and Sanford, State Road 1001 (North Carolina 751) to Durham, and North Carolina 87 from Pittsboro to Interstate 85 near Durham.

The State Highway Commission categorized the 1968 road mileage in Chatham County as follows:

	Miles
A. Primary Roads	
1. Rural Paved	145.0
2. Municipal Paved	10.6
3. Rural and Municipal Unpaved	--
Total Primary Highways	155.6
B. Secondary Roads	
1. Rural Paved	398.8
2. Rural Unpaved	425.8
3. Municipal Paved	20.3
4. Municipal Unpaved	3.4
Total Secondary Roads	848.3
C. City Maintained Roads and Streets	
1. Goldston	4.1
2. Pittsboro	9.5
3. Siler City	29.7
Total City Roads and Streets	43.3

Primary roads are United States Highways and North Carolina Numbered Highways. Secondary roads are all other state maintained routes and are signified by a four digit number. Before 1931 these secondary roads were maintained by the counties - hence, today they are often referred to as "county roads".

In Chatham County 42 percent of the total road mileage is made up of rural unpaved roads. There is not any recognizable pattern to the distribution of unpaved roads and there is not any particular geographic concentration of the roads. The large number of unpaved roads exists because of the sparse population of Chatham County. The unpaved roads do not present any mobility problems because of the ready accessibility of all parts of the county by paved roads. Mobility on the paved roads, however, is severely limited by the poor roadway alignment and profile. These conditions limit sight distance, restrict passing, and slow traffic movement considerably. At the same time, they present very dangerous conditions for the driver who is not familiar with the roads. Emphasis in county development should be given to improving poor road alignments and profiles, giving priority to those roads where traffic volumes are heaviest.

Daily traffic volumes alone are not the determinant of a need for improving two-lane roads to four-lane highways. This must be determined on the intensity of traffic, measured by the rate of traffic flow for a limited period of time. Daily traffic volumes only indicate the daily rate, while at any given hour of the day, the rate of traffic will be considerably different. Studies to determine the need for four-lane highways must be conducted by the State Highway Commission. These studies should be requested by the County Commissioners when they feel there is a need for improvement.

All the public roads in Chatham County have been grouped into classes according to the level of service they are intended to provide as part of the total road system. The rural road system consists of the following classifications:

1. Principal Arterial - A rural link in a network of continuous routes serving corridor movements having trip length and travel density characteristics indicative of substantial statewide or interstate travel and existing solely to serve traffic. This network would consist of Interstate routes and other routes designated as principal arterials.
2. Minor Arterial - A rural link in a network joining cities and larger towns and providing intrastate and intercounty service at relatively high (60 mph) overall travel speeds with minimum interference to through movement. This network would primarily serve traffic.
3. Major Collector - A road which serves major intracounty travel corridors and traffic generators and provides access to the arterial system.
4. Minor Collector - A road which provides service to small local communities and links the locally important traffic generators with their rural hinterland.
5. Local Road - A local road serves primarily to provide access to adjacent land and for travel over relatively short distances.

The classification of Chatham County roads as part of this system is shown on Map 20 on the following page. As noted before, this classification denotes the level of service that the particular roads are intended to provide. Several roads, as they exist, do not provide the intended level of service. The Chatham County Development Plan will give special attention to these needs. The Development Plan will also consider the need for reclassification of routes where it is evident that a different level of service should be planned for to meet future needs.

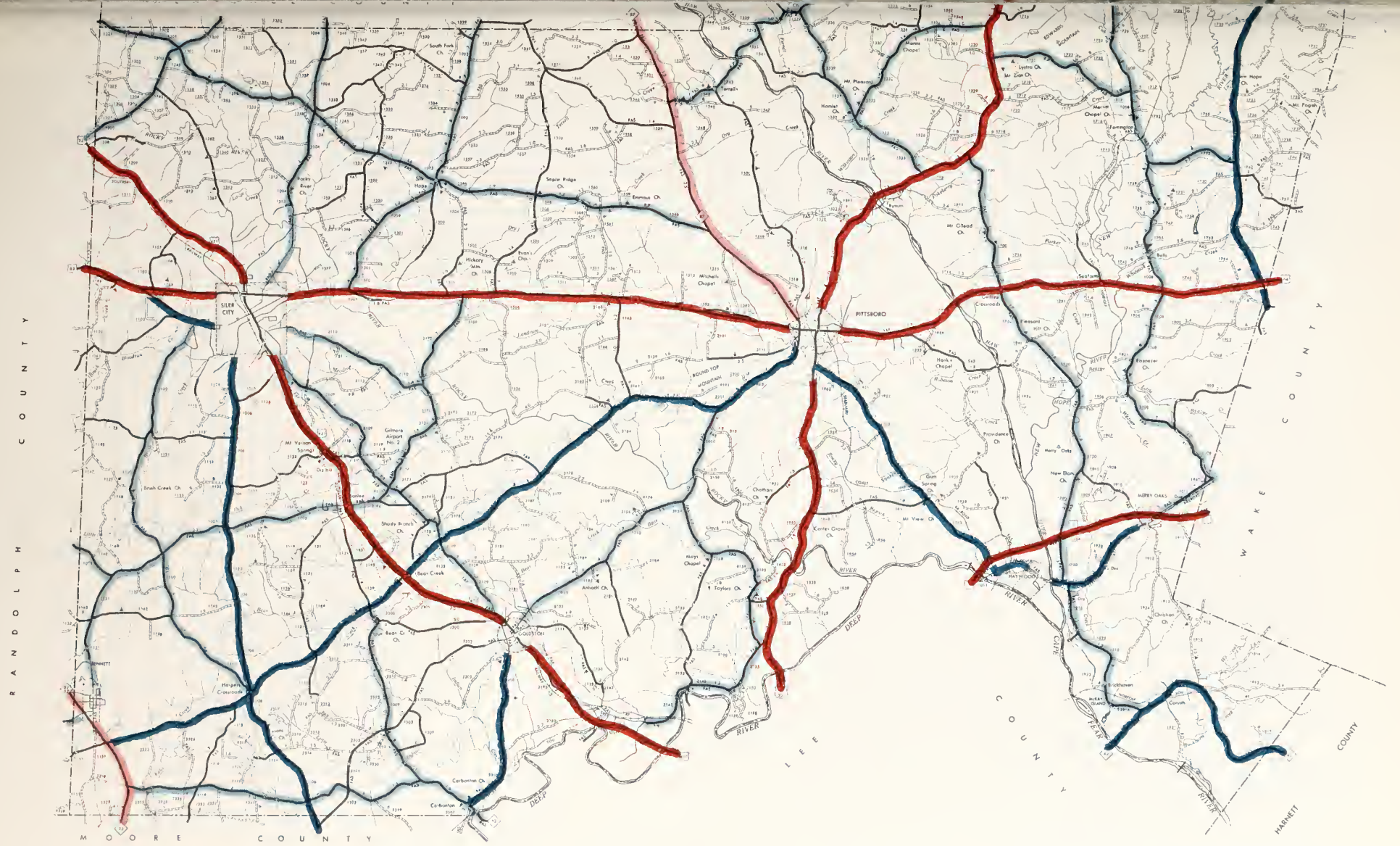
RAIL

Three major rail lines serve Chatham County, again due to the county's proximity to more densely populated urban areas. These railroads are the: Norfolk-Southern, Seaboard Coastal Line and the Southern Railroad.

The Norfolk-Southern Railroad as an entity does not operate in Chatham County, but owns a line which is operated under a long term lease as the Durham and South Carolina Railroad. This railroad is strictly a freight hauler. The line passes through Brickhaven and Corinth in the southeastern part of Chatham (Cape Fear Township). This line is not part of the Norfolk-Southern main line which passes south of Chatham County, running between Norfolk and Charlotte.

Two trains travel the tracks in each direction daily. A spur line from Brickhaven to near Haywood links the Norfolk lines with the Seaboard Railroad and allows the Norfolk lines to service the Carolina Power and Light Company plant near Moncure. Another set of tracks owned by the Norfolk runs from Durham to Duncan, North Carolina, in Harnett County. This track services those industries near Seaforth and Farrington in Chatham County and will have to be relocated due to the New Hope Reservoir. Trains travel daily, one in each direction, on the Duncan to Durham line.

The Seaboard Coast Line Railroad provides freight and passenger service. The track that runs through Chatham County is part of the Seaboard main line from Richmond, Virginia, to Miami, Florida. Ten passenger and 10 freight trains move daily on this track in each direction. The track moves through the southeastern portion of Chatham County just north of the Norfolk-Southern tracks. The towns in Chatham serviced by this freight line are Moncure, Merry Oaks, and Pittsboro. The nearest passenger stations are Sanford and Raleigh. Thanks to the Seaboard Coast Line Railroad the industries of Chatham County have an efficient link between Atlanta and Washington, D. C. Carolina Power and Light Company and the Seaboard Railroad are actively



CHATHAM COUNTY

NORTH CAROLINA

HIGHWAY CLASSIFICATION SYSTEM

- INTERSTATE HIGHWAY
- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- MAJOR COLLECTOR
- MINOR COLLECTOR
- all others — LOCAL ROADS

N

SCALE

involved in promoting industrial site locations in Chatham County through the formation of their Chatham County Industrial Development Association. These industrial sites are all near Moncure and very large tracts of land are available for development.

The Southern Railroad winds in a north-south direction through Chatham County serving the cities of Gulf, Goldston, Bonlee, and Siler City. This track is part of the line that runs from Sanford to Greensboro, and accommodates freight service. The Southern does provide passenger service but the nearest station is in Greensboro. Two trains travel daily in each direction on this route. The Southern has connecting freight service with the Norfolk in Gulf and the Seaboard in Sanford.

Railroads are today a major shipping source for industry. Several Siler City industries are dependent upon railroads for shipment of their finished product and a great deal of the county's woodland products are shipped by rail. Chatham County is fortunate to have excellent rail service and line on routes that are links to important industrial centers. Once again we find Chatham County with another plus for potential future development.

BUS

Greyhound and Trailways bus lines provide service between Chatham County and points north, south, east, and west. Greyhound runs four buses daily in each direction from Raleigh to Winston-Salem. These buses travel along U. S. Highway 64 and make major stops in Pittsboro and Siler City. Greyhound also runs a bus daily in each direction from Siler City to Charlotte. Trailways as part of their service from New York City to Florence, South Carolina, goes through Pittsboro. This bus travels daily in each direction and moves south from Durham to Pittsboro to Sanford and on to Florence, South Carolina. Trailways also operates four buses in each direction daily between Winston-Salem and Wilmington. This bus makes stops in Siler City, Bonlee, Goldston, and Gulf, and then on to Wilmington via Sanford.

MOTOR FREIGHT

Eighteen motor freight lines serve Siler City with the closest terminal being in Greensboro. Pittsboro is served by eight motor freight lines with the closest terminal being in Chapel Hill. Although a large number of motor freight companies service Chatham County, it is largely due to Chatham's proximity to the Piedmont Crescent cities. Those industries located in the county have dependable truck service to all areas of North Carolina and the Eastern Seaboard.

AIR

In providing a total transportation system there is one area in which Chatham County is deficient - air travel. Only one airport exists in the county and it lies just to the south of Siler City - Siler City Municipal. The airport has a 3800' x 150' turf landing strip with a turf apron area. The total aircraft operations (landings and departures) for the year 1966 was 4,000. The Federal government in their National Airport Plan recommends that Siler City Municipal Airport acquire additional land; construct a paved runway (3800' x 75'), stub taxiway, apron and turnarounds, and additional minor miscellaneous items. These recommendations would bring Siler City up to national aviation facility standards for a city of 5,000. Presently, Siler City Municipal Airport can accommodate only one and two engine small private planes. If industries fly larger aircraft or private jets, there is no facility in Chatham County to accommodate them until Siler City paves its airport. Gilmore Airport, a grass strip northeast of Bonlee, has not been in operation for over six years, and is virtually nonexistent.

Siler City and Pittsboro are approximately one hour by road from the Raleigh-Durham Airport which provides air passenger and freight service to any place in the United States and overseas through connecting cities.

Sources: North Carolina State Highway Commission, Advance Planning Section, Raleigh, N. C.

F.A.A. Recommendations, Siler City Municipal Airport, 1968.

UTILITIES

Future development is dependent upon adequate utilities to meet the demands of industries, businesses and residences. This section looks at the several different utility companies providing telephone service, natural gas and electric power. Water supply and waste disposal in the county have been evaluated in previous sections. While the natural gas and electric power supply and service appear adequate for present needs and future development, telephone service needs to be upgraded to prepare for the growth of the county.

TELEPHONE

There are seven different telephone companies serving Chatham County with ten local exchange areas. These are:

Telephone Company	Exchanges
Chapel Hill Telephone Company (state-owned)	Chapel Hill
General Telephone Company of the Southeast	Durham
Heins Telephone Company	Sanford
Randolph Telephone Company	Liberty
Randolph Telephone Membership Corporation (co-op)	Bennett
Southern Bell Telephone and Telegraph Company	Apex
United Telephone Company of the Carolinas	Siler City Pittsboro Bonlee Goldston

Each company has separate service areas within the county which are coordinated and regulated by the North Carolina Utilities Commission as shown by Map 21 on the following page. Each company has its own operator service and provides long distance service through the Southern Bell system. This large number of telephone company service areas is the result of Chatham County's location in the Piedmont Crescent Region and the low density of the population distribution. Several of the outlying portions

of the county have an economic focus on cities in the surrounding counties such as Chapel Hill, Durham, Apex, Raleigh, and Sanford. This situation results in a considerable variety of service. Persons on the Apex exchange in the eastern part of the county can call toll-free over 20 miles to Raleigh and the Research Triangle through Extended Area Service. For the people in Bonlee, however, there is a toll charge to call either Siler City or Goldston, each only six miles away.

An effort was made in the county between 1961 and 1963 to obtain Extended Area Service (toll-free calling service) between the Siler City, Pittsboro, Bonlee and Goldston exchange areas. In a ballot conducted under the direction of the North Carolina Utilities Commission, over two-thirds of those who voted in the Bonlee and Goldston exchange areas voted in favor of EAS with an increase in rates to pay for the service. Less than one-third of those who voted in the Pittsboro and Siler City exchange areas voted in favor. It is obvious from these results that the people in the Bonlee and Goldston areas desire connections with the larger exchange areas of Siler City and Pittsboro, while the people who already have the convenience of these larger exchange areas were generally not in favor of any extended service at an additional charge.

Extended Area Service is important to the citizen, the businessman, and the development of the county. Such service tends to draw an area closer together, allowing more frequent communication among residents, providing consumers with better information on goods and services available to them, and increasing the market area for businesses. The availability of EAS would enhance the potential of the county for future development by providing another incentive to attract area serving businesses and industries that need to frequently call upon a large employment and service base.

TELEPHONE EXCHANGE SERVICE AREAS

C.H.T.C.	CHAPEL HILL TELEPHONE CO.	R.T.M.C.	RANDOLPH TELEPHONE CO.
G.T.C.	GENERAL TEL. CO. of the SOUTHEAST	S.B.T.T.C.	SOUTHERN BELL TEL. and TEL. CO.
H.T.C.	HEINS TELEPHONE CO.	U.T.C.	UNITED TEL. CO. of the CAROLINAS
R.T.C.	RANDOLPH TELEPHONE CO.		

CHATHAM COUNTY

NORTH CAROLINA

N

SCALE

ELECTRIC POWER

Five power companies serve Chatham County through a complex network of electric transmission and distribution lines. These companies are: Carolina Power and Light Company, Duke Power Company, Central Electric Membership Co-operative, Randolph Electric Membership Co-operative, and University Service Plants. Carolina Power and Light Company provides the greatest power source (450,000 kilowatts daily) for Chatham County from a major plant near Moncure. With the Carolina Power and Light Company power plant near Moncure, Chatham County has access to extensive amounts of power for residential, commercial and industrial use.

As mentioned about the telephone service in Chatham County, problems can arise when a large number of utility companies serve a county. However, in the case of the electric utility companies, the problems of duplication of service and varying quality service do not exist. Carolina Power and Light Company and Central Electric Membership Co-operative provide approximately 80 percent of the electrical power in Chatham County. These two companies along with the Duke Power Company, the University of North Carolina, and Randolph Electric Membership Co-operative provide more than adequate service to all the townships in Chatham County.

NATURAL GAS

Natural gas is supplied in Chatham County by the Public Service Company of North Carolina. A 10 inch line extends to Siler City from Alamance and Orange Counties. An 8 inch line from Chapel Hill to Sanford passes through Pittsboro and serves areas along Highway 15-501. A 4 inch loop line links Gulf and Goldston with the Siler City and Pittsboro lines. Also there is a 6 inch line between Moncure and Brickhaven which connects to Sanford through a 4 inch line. The natural gas service in Chatham County is sufficient to meet future development needs. It is available in all areas that have been considered suitable for industrial development.

SUMMARY

If urbanizing trends are to continue in Chatham County it is important that the high level of service provided by the electric and gas companies be maintained and that telephone service be improved. Chatham has excellent electric and gas resources to offer to expanding industrial and residential sections of the county. Telephone service should include Extended Area Service between Siler City, Pittsboro, Bonlee, Goldston, Moncure, Bennett, Haywood, Merry Oaks and the other communities of Chatham County. Extended Area Service would save time and travel, improve communication between sections of the county, and make the county a more convenient location for new businesses and residents.

COMMUNITY FACILITIES

Community facilities are the general and special purpose facilities provided for the use of the entire county. They include all the public facilities of the county and several semi-public and private facilities which serve public needs as well. Several community facilities have already been discussed, including water supply, waste disposal, roads, airports and utilities. This section will cover the influence on development potential of fire protection, police, medical, educational and recreational services. It should be noted that although the focus of this section is primarily on the facilities, the program of service connected with these facilities is also of importance. While additional consideration will be given to the need for community facilities in Chatham County in the Development Plan, future planning should include a Community Facilities Plan to study and prepare a detailed plan for meeting the long range needs for community facilities and service programs.

FIRE PROTECTION

Although there are several fire departments operating in Chatham County, there are only three fire districts that have been rated by the North Carolina Fire Insurance Rating Bureau. These districts are the Town of Siler City, the Town of Pittsboro, and the Central Chatham rural fire district adjacent to Siler City, served from the Siler City Fire Department. The municipal districts are rated 8 and the rural district is 9AA on a declining scale from 1 to 10. The other fire departments in the county, all volunteer companies, are: Bennett Fire Department, Bonlee Fire Department, Goldston Rural Membership Fire Department, Moncure Fire Department, North Chatham Volunteer Fire Department, and Silk Hope Volunteer Fire Department, Inc.

There is no County Fire Marshall, no County Fire Inspector and no county fire code. As a result, there is no coordination

between the services of the volunteer fire departments and no program in the county to provide county-wide fire protection. The County Board of Commissioners has the power to establish a county-wide fire protection program through county fire departments or through contract with private, municipal or other county fire departments. Chatham County has an immediate need for better fire protection and a strong fire prevention program. As development increases, this need also increases. The major benefits to be obtained from such a program are reduced chances of fires and reduced fire losses of both property and lives. The cost of a fire prevention and protection program would depend on how extensive its coverage was. Initial aid in evaluating the needs and costs in Chatham County is available through the North Carolina Insurance Department Fire Marshall. This evaluation of whether the county should take any steps to coordinate or assist the several fire departments should be made as soon as possible.

POLICE PROTECTION

There is full time municipal police service in Siler City (8 men) and in Pittsboro (3 men). The Chatham County Sheriff's Department enforces the law in the remainder of the county. These protective services are supplemented by the North Carolina Highway Patrol which patrols the state roads throughout the county.

MEDICAL FACILITIES AND SERVICES

The only medical facilities in Chatham County are found in Siler City and Pittsboro. There is a hospital in each town - Chatham Hospital in Siler City and Mathieson Clinic in Pittsboro - with a total of 110 beds. The availability of doctors is also limited to these two towns. In 1969, there were three general practitioners and two dentists in Pittsboro and five general practitioners, two surgeons, three dentists and one ophthalmologist in Siler City. This availability of service is below the desirable standard for the population of Chatham County.

Part of Chatham's needs for hospitals and medical service are met by nearby North Carolina Memorial Hospital in Chapel Hill and by doctors, dentists and the Lee County Hospital in Sanford.

A limited amount of health service is also provided by the Chatham County Health Department. The Health Department Program is wide in scope, but limited by the number of personnel available and the few clinics they can operate. The Health Department provides very little direct medical care or treatment, but seeks to aid the doctors and hospitals through programs of communicable disease control, maternity care, health education, family planning, environmental sanitation, physical therapy and rehabilitation. The Health Department also serves a coordinative role by referring cases to local physicians or hospitals when medical care is necessary and encouraging persons to make the best use of what services are available.

The Health Department provides its service through clinics in Pittsboro, Siler City, Goldston and the Moncure-Haywood area. The clinics are able to operate on a regular schedule for part of each week with the Health Department staff rotating from clinic to clinic. The staff includes four nurses, two family planning aides, two clerks and a sanitarian. Program supervision is provided by a District Health Officer who supervises a five county district which includes Chatham.

The clinics are supplemented by home visits, school health clinics and education programs, and sanitation inspections. The sanitarian is responsible for inspecting and grading food handling establishments, motels, boarding homes, schools, water supplies, waste disposal, milk supplies and other public facilities and food supplies.

As the population grows in Chatham County, so does the need for medical services. The problems of environmental sanitation and communicable diseases are compounded by the increasing number of people and the increasing density of development. More public health workers are needed to prevent illness and more doctors are needed to treat the sick, especially outside the towns of Siler City and Pittsboro.

EDUCATIONAL FACILITIES

A recent School Survey (December, 1968) published by the North Carolina Department of Public Instruction, School Planning Division, clearly spelled out the inadequacies of the Chatham County school system and made recommendations for immediate and long range improvements. The most significant weaknesses are the need for a new high school in the Pittsboro area, additions to the high schools at Siler City and Chatham Central, renovations to the other existing schools, and a new elementary school in Siler City. The county has attempted to alleviate these shortcomings with a $3,600,000 school bond issue which was passed in March, 1969. This will provide for additions of about 40,000 square feet each to the Jordan Matthews High School in Siler City and to the Chatham Central High School in Bear Creek, and a new high school for the Pittsboro School District on U. S. 15-501 north of Pittsboro.

The Chatham County school system is organized around three school districts, each of which has a central four year high school. The growth limit for these high schools is planned at 1,200 students. The County Board of Education is opposed to larger high schools as being too large to work effectively and imposing undesirable requirements for lengthy travel to the schools from many points in the county. Present high schools have 850 students in two schools and 550 in the third. The Board of Education has recognized that past mistakes have occured due to shortsightedness and is now planning ahead to prevent future shortcomings. The benefits of these planning efforts can be noted in the accreditation of the Chatham Central and Jordan Matthews High Schools by the Southern Association of Colleges and Schools. Accreditation for the Pittsboro High School is not expected until the new building is completed in 1970.

There are no technical institutes or colleges in Chatham County, but there is at least one available in every county adjacent to Chatham. These include the University of North Carolina in Chapel Hill, Duke University, North Carolina Central

University and Durham Technical Institute in Durham, North Carolina State University, Shaw University, Meredith College, Peace College, Saint Augustine's College, Saint Mary's Junior College, and Holding Technical Institute in Raleigh, Campbell College in Buie's Creek, Central Carolina Technical Institute in Sanford, Sandhills Community College in Southern Pines, Randolph Technical Institute in Asheboro, Elon College in the town of Elon College, and Alamance Technical Institute in Burlington.

RECREATIONAL FACILITIES

The 1968 recreational inventory published by the North Carolina Recreation Commission showed that Chatham County did not meet the desired minimum national standards in providing park areas, ballfields, playgrounds, swimming pools and other recreational facilities. Most of the recreational facilities presently available in Chatham County are commercial enterprises operated for a profit, or private clubs. The few public facilities available are predominantly operated by one of the cities or as part of the school facilities. This situation has developed because of the widely dispersed rural nature of Chatham County. The large areas of open space have not made any need apparent for public parks or recreation areas in the county. The New Hope Reservoir is expected to provide extensive recreational facilities in the form of water areas and parkland. This land, when the reservoir is completed, will be available for lease to public operation. It could serve very well as a regional park, recreation area and campground. It will not serve the more frequent needs for smaller recreational facilities in other parts of the county and near small communities. For specific local areas, the recreation needs should be determined, sites acquired and facilities provided.

The only major public recreation area in the county is the state maintained recreation site at Avent's Ferry on the Cape Fear River at the N. C. Highway 42 bridge crossing. This is in southeast Chatham County, 3½ miles downstream from the Carolina

Power and Light Company power plant at Moncure. The recreation area has a large covered picnic pavilion, 40 individual picnic areas with fireplaces and tables, three boat ramps and a pier. Toilet facilities are available and a well provides fresh water. The area is used for swimming, fishing, boating and water skiing by residents of the Raleigh, Sanford and Fayetteville areas as well as from Chatham County. In fact, it is notable that the park generally has fewer visitors from Chatham County than many other areas. This may be due to the fact that the site is relatively unknown to most Chatham County residents and is actually closer to Sanford than it is to Pittsboro or Siler City.

This park site itself is a good multi-purpose recreation facility. It is an example of the type of small park that could be established in other areas of the county through local efforts with the assistance of the Recreation Division of the North Carolina Department of Local Affairs. Additional park areas might also be developed in association with the North Carolina Wildlife Resources Commission or the State Parks Division of the North Carolina Department of Conservation and Development.

One approach to developing new county recreational areas would be to locate them at sites that have been prominent in the past history of the county. There are several points through the county that have historical significance. Ten of these have been marked with Highway Markers by the North Carolina Department of Archives and History in cooperation with the State Highway Commission. These markers commemorate Captain John Blakeley, War of 1812 (N. C. 87), John Owen, Governor (Pittsboro), Granville Grant, founder of Colony of North Carolina (U. S. 1, Moncure), Tory Raid by David Fanning (U. S. 15-501, Pittsboro), Charles Manley, Governor (U. S. 15-501, Pittsboro), James I. Waddell, Confederate Commander (U. S. 15-501, Pittsboro), Ramsey's Mill, Cornwallis campsite (U. S. 1, Moncure), Wilcox Iron Works (U. S. 421, Mt. Vernon Springs), Hermon Husband, Ware of the Regulation (U. S. 421, Siler City), and Rocky River Church (State Road 2110). Land surrounding many of these historical markers could serve

well as picnic areas, small parks, and highway rest areas. At present, there is often not even room to pull off the road. One or more historical groups of the county could undertake a project to acquire and develop some of these sites for this purpose which would enhance the historical significance and increase recreational area as well.

Planning and developing adequate recreation facilities for the county would require considerable time and effort by the County Commissioners. This work could be turned over to a committee of interested residents by the formation of a County Recreation Commission to undertake such a program. Such a commission could determine the needs for recreation areas in different parts of the county, work with the County Planning Board in evaluating different proposed sites in light of future county development, and work with State agencies such as the Recreation Division, the State Parks Division and the Wildlife Resources Division in planning and developing facilities at each site.

SUMMARY

At the heart or base of every community are its institutions and the ability of the governing body to provide needed human services. In order for communities to grow and prosper, they must meet the demands of modern society for high quality education, effective fire and police protection, readily available medical care and recreation areas, and efficient water, sewer, utility, and transportation systems. When communities are too small or too widespread to provide these services to all the people, the county must take the initiative. More often, the best service can be provided to residents by mutual efforts of the communities and the county in joint programs. Chatham County and its communities have considerable potential for growth and prosperity, but they must be ready to compete with other North Carolina areas to keep their residents from moving away and to attract new families.

Chatham County has begun its efforts for a better community through approving the school bond issue to pay for what they wanted in better education. This program was not forced on the county by their local government. If the county wants further improvements, they must make these desires known to their representatives. If economic progress and growth are desired, improved community facilities will be needed. Adequate planning for these needs should include a Community Facilities Study and Plan, the specification of priorities in a Public Improvements Program, and the approval of a Capital Improvements Budget to guarantee the financing of projects as the need arises.

Sources: General Provisions Pertaining to Public Fire Defenses for Communities with Limited Water Supply (Raleigh, N. C.: North Carolina Fire Insurance Rating Bureau, November, 1964).

Rural Fire Districts in Connection with Municipal Fire Departments (Raleigh, N. C.: North Carolina Fire Insurance Rating Bureau, July 15, 1965).

Organization of a Fire Department, 1966 (Boston, Mass.: National Fire Protection Association, 1966).

School Survey, Chatham County, 1968 (Raleigh, N. C.: North Carolina Department of Public Instruction, May, 1968).

North Carolina Outdoor Recreation Areas and Facility Survey, Chatham County Summary (Raleigh, N. C.: North Carolina Recreation Commission, 1968).

Guide to North Carolina Historical Markers (Raleigh, N. C.: State Department of Archives and History, 1964).

NEW HOPE RESERVOIR

Multipurpose reservoirs are built by the Army Corps of Engineers for the purposes of navigation, flood control, low-flow stream augmentation, recreation, water storage, hydroelectric power, and wildlife propagation. The primary purpose for the New Hope Reservoir is flood control, but it has also been designed for water quality control, water supply, general recreation, and fishing and wildlife. The New Hope Reservoir will provide a source of water for cities, farms and industries. The immediate area surrounding the New Hope will offer sites for homes, parks, and commercial enterprises to serve new residents attracted by the recreation potential of the lake. There is immense potential for development of this area. It can be planned and coordinated to become a high quality area that will add to the potential of the rest of Chatham County, or it can be allowed to develop haphazardly without due regard for the protection of either human beings or the environment, creating a blighted countryside that will prevail for many years. The best possible development of the New Hope area will require the interest and support of all Chatham County residents as well as the Corps of Engineers and the several agencies and departments of the State of North Carolina.

HISTORY OF THE PROJECT

The Army Corps of Engineers have been studying the problem of flood control on the Cape Fear River intermittently since 1927. In September, 1945, a massive flood occurred which did an estimated $5 million in property damage including flooding one-fourth of the City of Fayetteville. On May 2, 1946, the United States House of Representatives Committee on Flood Control passed a resolution directing the Corps of Engineers to prepare recommendations for improving flood control in the Cape Fear River Basin.

After a recommendation to Congress by the Army Corps of Engineers, a comprehensive survey of the Cape Fear River Basin was started in July, 1947. This survey, after an eight year suspension period, was begun again in 1955. Several dam sites were investigated on both the Deep River and the Haw River. In 1957, the study concluded that the most logical point at which to initiate flood control would be at the present New Hope Reservoir site. On December 18, 1963, Congress authorized construction of the New Hope Dam.

The Corps of Engineers was authorized to begin mapping and acquisition of property on January 1, 1967. At the end of 1969, the reservoir mapping had been completed, 32 percent of the lands to be acquired had been negotiated and agreed upon, and the dam site tests, laboratory building and office building have been completed. Acquisition is expected to be complete within another 2½ years. Planning is currently being completed for the relocation of roads, power lines and utilities. Relocation projects will begin with relocating the Norfolk-Southern railline to the east of the reservoir site. This will be followed by the relocation of roads and utilities, of which the biggest project will be building a four-lane roadbed and bridge for U. S. 64. The dam itself will be one of the final construction projects.

LOCATION

The site chosen by the Army Corps of Engineers for the New Hope Dam is located on the Haw River about four miles above the Deep River junction and 2.5 miles north of Moncure. It is just below the confluence of the Haw River and its major tributary, the New Hope River. While the dam site is on the Haw River, most of the area to be directly affected by the project is in the New Hope River Basin. Because of the steeper gradient and larger flow of the Haw River, water will be impounded only about five miles up the Haw Valley, but as much as 20 miles up the New Hope Valley.

BRIEF FACTS ABOUT THE DAM

The New Hope Dam will be an earth filled structure with rock shells 1,330 feet long with a maximum height of 112.5 feet from the stream bed with a spillway crest elevation of 240 feet above Mean Sea Level. The flow of the river will be controlled by a gated conduit outlet structure 19 feet in diameter, extending for a length of 680 feet through the base of the dam. The standard project flood elevation is 246.2 feet above Mean Sea Level and will cover an area of 37,235 acres. The top of the flood control pool is at 240 feet above Mean Sea Level and will cover 31,953 acres. The normal conservation or recreational pool will be at elevation 216 feet above Mean Sea Level and will cover an area of 14,257 acres, having a shore line of 150 miles.

At normal pool elevation 216, the deepest portion of the reservoir will be approximately 59 feet. Where U. S. Highway 64 crosses New Hope Creek, its depth will be approximately 30 feet. The plans are to clear the reservoir from elevation 217 down to elevation 197 and to have modified clearing from 197 to the lowest reaches of the reservoir which is 154 feet above Mean Sea Level.

The total land to be acquired for the project will be about 48,000 acres including land for flood control, wildlife mitigation, recreation, and project operations. Outside the project area, some land will also be acquired for relocation of roads and the railroad.

RESERVOIR ADVANTAGES

American society is becoming more and more concerned over the worthwhile use of their leisure time activities and expanding the opportunities for outdoor recreation. The continuing trends toward industrialization and urbanization have created new desires - even needs - for outdoor recreation to help relieve the stresses and strains of congested living. The mobility of Americans enables them to travel far afield in search for recreation. The demand for recreational outlets is manifested in

the increasing pressures placed upon national and state parks and forests, seashores, and streams, resorts and other resources.

The New Hope Dam will create for Chatham County and the State of North Carolina a shoreline and water surface suitable for many recreational activities. In addition, the New Hope Reservoir will provide opportunities and sites for wildlife refuges and assure improved water supplies for municipal and industrial use. The New Hope Reservoir could transform Chatham's countryside into a regional center for outdoor recreation.

The Corps has prepared a preliminary development plan for the New Hope Project and has proposed twenty-eight public use and service area sites. Individual site plans can be obtained from the Corps' Cary office. These public recreation access areas, if developed, would offer the user such facilities as: trail roads, launching ramps, picnic tables, fireplaces, drinking fountains, wells, toilets, buildings and shelters, tent campgrounds, piers and wharves, cabanas, trash receptacles, and parking areas. Quasi-public agencies will probably also desire to develop organized camps and recreation areas near the New Hope.

An important clue to the actual success of the New Hope will be its proximity to Burlington, Chapel Hill, Durham and Raleigh. Being the first major reservoir in the Research Triangle Region, it will undoubtedly prove to be both an economic and recreational blessing to the citizens of Chatham County.

CONTROL

The overall supervision for construction and operation of the New Hope Reservoir will be the responsibility of U. S. Army Engineer District Wilmington, Wilmington, North Carolina. The U. S. Army Engineer District Savannah, Savannah, Georgia, is responsible for the real estate acquisition of the lands for the project and for furnishing support to the Wilmington District concerning the real estate activities in connection with the operation of the project. The Savannah District has an Area Real Estate Office located at 109 Ward Street, Cary, North Carolina.

The land acquisition policy of the Corps of Engineers is to acquire all land necessary to fulfill the purpose for which the project was authorized. A strip of land around the flood storage reservoir will be acquired to assure that there will not be danger to privately owned lands caused by erosion resulting from wave action caused by either wind or the wake of boats passing up and down the lake and to assure that the public will have access to the lake at all times. Also, additional land, in special areas, will be acquired above this strip to afford the maximum development of the recreational potential of the reservoir. The criteria read as follows for the New Hope Dam and Reservoir: Land will be acquired 300 feet in a horizontal distance landward from elevation 240 above Mean Sea Level or to elevation 245 whichever would encompass the most area. Additional land will be acquired over and above this amount to assure public access and the development of the recreational potential of the reservoir.

The Corps of Engineers has received the cooperation of various governmental agencies in North Carolina in proposing ideas for the development and utilization of the area for public use benefits. Among those agencies are: the Department of Water and Air Resources (State), the Bureau of Sport Fisheries and Wildlife (Federal), the Wildlife Resources Commission (State), the Department of Health, Education and Welfare (Federal), the Division of Parks (State), and the Division of Forestry (State). One of the most extensive projects proposed is that by the Division of Forestry.

The Division of Forestry is planning to locate an overall forestry facility adjacent to the New Hope Reservoir. The facility will serve as headquarters for the forestry programs in the Piedmont region, a training facility for forestry employees' and other agencies engaged in forestry work, and the location of a small demonstration forest. The Division of Forestry has also requested land for an air strip to meet their long range plans.

As a result of the land acquisition policy of the Corps of Engineers, there will not be any immediate lake frontage lands available for private development for either residential or commercial use. There will be enough access points to afford access to anyone wishing to place a boat in the lake or to enjoy camping or picnicking. It will only mean launching a boat at a public dock or ramp rather than from a private dock or ramp. The Secretary of the Army is authorized to grant leases of land within the project boundaries to governmental or quasi-governmental agencies for park or recreational purposes for nominal consideration. This will result in preservation of the natural land along the lake shore, disturbed only intermittently by public landings and recreation areas.

Although intensive development will not take place along the shoreline of the lake, demands can be expected for intensive residential and commercial developments from the limits of the government acquisition up to an approximate ten mile area surrounding the lake. This will include all seven townships in the eastern half of Chatham County as well as adjacent portions of Orange, Durham, Wake and Lee Counties. These surrounding counties all have greater population densities than Chatham County, and are expected to continue to grow in population at greater rates than Chatham. The potential of the reservoir and the open space in rural Chatham will be very attractive to those people who wish to move to a less crowded area. The County Planning Boards in these counties and the Research Triangle Regional Planning Commission have already given some consideration as to the effects of the New Hope Reservoir with respect to their future development. Chatham County must make its own efforts to protect the interests of its citizens and the natural resources of the area. To protect these interests, Chatham County will need to enact zoning and subdivision ordinances.

Subdivision regulations are presently under consideration by the Chatham County Planning Board and should be enacted in the near future by the County Commissioners. A zoning ordinance

presently exists for Baldwin and Williams Townships, but should be revised in consideration of the general development plan and extended to include Cape Fear, Center, Haw River and New Hope Townships. In the ordinance permitted uses under each land use district must be clearly spelled out if development is to be properly guided.

Chatham County residents can go much further than this in their efforts to have a measure of control over future reservoir development. About 11,000 acres of the total land to be acquired for the reservoir project will be reserved for public access to the reservoir, and for public parks and recreation areas. Some or several of these sites could be leased for operation to the County Government or to a Chatham County Recreation Commission which could act as an agent for the county. The county would be able to operate these recreation areas and develop facilities as it desired within the requirements of the lease, paying the costs with funds from user charges.

An alternative arrangement to insure county representation in the reservoir development planning would be for the county to ask the North Carolina General Assembly to form a New Hope Reservoir Development Commission, similar to the John H. Kerr Reservoir Development Commission, for studying the development and potential of the reservoir area and initiating and carrying out policies to promote the best overall development of the area. This would provide a sound base for citizens from all counties adjacent to the reservoir to work together with State Agency officials from the Recreation Commission, Board of Conservation and Development, and Wildlife Resources Commission to coordinate resident desires and state policies with the federal requirements for the reservoir operation.

If one of these courses of action is to be selected by the county, it should act promptly to initiate the desired alternative. While reservoir construction is presently delayed for lack of appropriations by the federal government, it could be completed within four years with adequate annual funding. An agency

concerned with the reservoir development could use this time in conferring with state and federal agencies on wildlife, recreation, stream sanitation, forest service and soil conservation programs, recreation area plans, improvement of approaching highways, annual program and budget planning, deciding sublease arrangements, and many other activities. It could also work actively to influence the early completion of the reservoir construction.

SUMMARY

In summary, the New Hope Reservoir can be a vital part of the Chatham County economy that will attract tourists and vacationers from all over the state and even beyond. The reservoir will increase the potential for industrial and residential development of Chatham County because of the vast availability of water and the appeal offered through leisure time activities. New industry will provide more jobs and money in addition to increasing the county's tax base. With more people a demand may be expected for increased schools, hospitals, police and fire protection. Usually such demands result in a general up-grading of the level of service of both existing public facilities and commercial services such as entertainment and shopping. More traffic will be moving through Chatham County on the main east-west route, U. S. Highway 64. There will be even more reason to make U. S. 64 a four-lane facility. Increased traffic will expand the potential for recreation oriented commercial activities. Existing general stores along the routes leading to the lake will begin to cater more and more to the tourist's needs. Care must be exercised that such development will not result in a haphazard variety of low quality stores with marginally constructed buildings, inadequate parking facilities, and a bombardment of advertising signs and billboards. The logical answer in terms of preventing poorly planned development is to adopt a building code, zoning regulations, and subdivision regulations for the entire county. Yet still further action may be taken for more

comprehensive control of development by establishment of a Chatham County Recreation Commission and a New Hope Reservoir Development Commission.

Sources: Master Plan for the New Hope Reservoir, U. S. Army Engineer District Wilmington, Wilmington, N. C.

Outdoor Recreation for a Growing Nation, Tennessee Valley Authority, 1961.

Raleigh News and Observer, "New Hope Dam Nearer to Becoming a Reality", February 19, 1967, Raleigh, North Carolina.

Recreation, Department of the Army, Corps of Engineers, 1966.

Open Space for Urban America, Department of Housing and Urban Development, Washington, D. C., 1965.